HEALTH COMMUNICATION, HEALTH LITERACY, AND THE PREVALENCE OF OBESITY, DEPRESSION, ANXIETY AND GOOD DISEASE SELF-MANAGEMENT AMONG DIVERSE ADULTS LIVING WITH TYPE 2 DIABETES: IDENTIFYING PREDICTORS OF HIGH QUALITY PATIENT-PROVIDER COMMUNICATION AND QUALITY OF LIFE

by

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ABSTRACT

HEALTH COMMUNICATION, HEALTH LITERACY, AND THE PREVALENCE OF OBESITY, DEPRESSION, ANXIETY AND GOOD DISEASE SELF-MANAGEMENT AMONG DIVERSE ADULTS LIVING WITH TYPE 2 DIABETES: IDENTIFYING PREDICTORS OF HIGH QUALITY PATIENT-PROVIDER COMMUNICATION AND QUALITY OF LIFE

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Type 2 diabetes is a highly prevalent disease, projected to increase in prevalence, while expensive to treat. This study sought to identify significant predictors of each of the two study outcome variables—a higher quality of patient-provider communication, and a higher quality of life. The online sample (N=72) was 78% (n=56) female with a mean age of 55.3 years, while 71% Black/African American with a good overall health status. They rated the overall quality of care received from their provider between good and very good. Using the new Patient-Provider Communication Scale (PP-CS-07, patient-provider communication was closest to very good. Health literacy skills were closest to very good, and health literacy self-efficacy was closest to very good. Level of knowledge for caring for type 2 diabetes was closest to very good knowledge. Participants were in an action stage with 80% confidence (very good self-efficacy) to perform seven diabetes self-management behaviors. Some 43.1% experienced depression, 44.4% experienced

anxiety, and 20.8% sought counseling in the past year. The mean quality of life rating was closest to good quality of life.

While controlling for social desirability, backward stepwise regression showed better quality patient-provider communication was significantly predicted by: received diabetes education, higher rating of health care quality, higher level of health literacy skills, and, being in a lower stage of change for self-care behaviors—with 79.2% of variance explained by this model. Better quality of life was significantly predicted by: female gender, having received diabetes education, no past year anxiety, higher annual household income, lower weight status, higher health literacy self-efficacy, higher rating of knowledge of diabetes self-management—with 69.4% of the variance explained by this model.

Findings make a compelling case for screening patients for depression and anxiety, using the brief tool used in this study; and future research evaluating the impact of health educators and providers being trained in motivational interviewing, while using the Patient-Provider Communication Scale (PP-CS-7) as a new tool to compare ratings by patients of providers trained in motivational interviewing. Healthcare policy should mandate such training in brief motivational interviewing, and evaluate the impact of training in containing costs.

DEDICATION

To my grandparents Joseph and Evelyn Caleb and Louis and Lillie Mae Artis, and to all other ancestors known and unknown, I am grateful.

To my mother Relda Artis Caleb, you have supported this journey in *every* way possible. Thanks for demonstrating what support looks like.

To my nieces, nephew, and god-children,

Lateal	Isaac	Baby Caleb (2021
Shaima	Mya	Baby Harris (2021)
Juelz	Brooklyn Laila	
Christopher	Mariah	

…Whatever you choose to do, aim high, and always do your best, even when you are scared.

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J. M. A. C.

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Chapter I

INTRODUCTION

Globally and in the United States, type 2 diabetes remains a highly prevalent condition (Cowie, 2021). It is associated with mortality and co-morbidity—which often goes undiagnosed along with pre-diabetes, compromising efforts to ensure adequate treatment and care (Cowie, 2021).

As per Powers et al. (2021), the "prevalence of diagnosed diabetes is projected to increase in the U.S. from 22.3 million (9.1% of the total population) in 2014, to 39.7 million (13%) in 2030, and to 60.6 million (17%) in 2060" (p. 351). An important distinction involves how about "90-95% of those with diabetes have type 2 diabetes" (p. 351). In addition, this is an "expensive disease" with associated medical costs for caring with a person with diabetes being "2.3 times more than for a person without diabetes" (p. 351). Unfortunately, the field is plagued by the challenge of "therapeutic targets not being met," even though there have been "advancements in medication and technology treatment modalities" (p. 351). Also, the field needs a "variety of culturally appropriate services" that can be offered "in a variety of setting utilizing technology to facilitate access" to diabetes management and care (p 368).

Indeed, long documented is how, globally, the prevalence of diabetes is increasing, along with diabetes-related morbidity and mortality (Juarez et al., 2018). Among the types of diabetes, type 2 diabetes is the most prevalent, comprising 90 to 95% of those with diabetes. Of great concern is how type 2 diabetes may remain asymptomatic

for years, while timely “lifestyle interventions and clinical treatments” are key to good management (p. 121).

According to the 2017 National Health Survey (NHIS), some 8.6% of adults in the United States have been diagnosed with type 2 diabetes, constituting 21 million adults or 90.9% of all cases of all types of diabetes (Bullard et al., 2018). These findings are important, since prior national diabetes prevalence estimates failed to distinguish the type of diabetes (i.e., type 1 or type 2) among adults. Without distinguishing the type of diabetes, there are currently 23 million adults diagnosed with diabetes in the United States (Bullard et al., 2018).

Recent decades have witnessed both an increase in type 2 diabetes and obesity, including abdominal obesity, while suggesting that the rise in obesity may be a contributing factor in the prevalence of type 2 diabetes (Caspard et al., 2017). It has been reported that abdominal obesity is both a likely key factor contributing to the ongoing epidemic of type 2 diabetes, and a vital target for public health interventions. This followed from the analysis of adult data from 1999/2000 to 2013/2014 using the national Health and Nutrition Examination Surveys (NHANES) to estimate the prevalence of both type 2 diabetes and abdominal obesity. Of note, the contemporary societal “burden of type 2 diabetes could” be controlled “by primary prevention efforts and public health interventions that target modifiable risk factors,” with the need to prioritize “these efforts in the population with abdominal obesity” (p. 671).

It has been well-established that the prevalence of type 2 diabetes is higher among the Hispanic population, in comparison to the national average (Aguayo-Mazzucato et al., 2018). This has been linked to numerous sociocultural factors, including socioeconomic

status, and reduced access to health care and health education. Other factors are biological, including a suspected genetic predisposition to obesity and a higher insulin resistance (Aguayo-Mazzucato et al., 2018).

In a collaborative statement from the American Diabetes Association, the Association of Diabetes Care and Education Specialists, the Academy of Nutrition and Dietetics, the American Academy of Family Physicians, the American Academy of PAs, the American Association of Nurse Practitioners, and the American Pharmacists Association, Powers et al. (2021) discussed the role and underutilized opportunity of diabetes self-management education and support (DSMES) in the management of type 2 diabetes in adults.

Powers et al. (2021) advise healthcare providers, healthcare systems, healthcare payors, policy-makers, and individuals living with diabetes to adapt and facilitate access to DSMES as part of usual diabetes care, including those that are "innovative and nontraditional" (p. 355). To this end, Powers et al. state the following:

> The U.S. health care system cannot sustain the costs of care associated with the increasing incidence of diabetes and diabetes-related complications. DSMES offers a pathway to decrease these costs and improve outcomes. DSME improves quality of life and is cost-effective. All members of the health care team and health systems should promote the benefits, emphasize the value, and support participation in initial and ongoing DSMES for all people with diabetes. (p. 355)

In designing and implementing DSMES encounters, Powers et al. (2021) advocated for a "person-centered approach" that considers "learning preferences, literacy, numeracy, language, culture, physical challenges, scheduling challenges, social determinants of health, and financial challenges" (p. 356) of prospective participants, and especially for high risk individuals and communities. DSMES is deemed "critical" at four phases in diabetes care: diagnosis; annually or as needed based on treatment goal status;

complications; transitions in care and/or life events (p. 359). In addition to traditional providers of DSMES, Powers et al. suggest the inclusion of family and peers in this construct (p. 357). As an arm of diabetes management, DSMES should incorporate general nutritional guidance, although medical nutrition therapy (MNT) by clinical nutrition professionals should also be available as a "separate and distinct service" (p. 362).

Finally, Powers at al. (2021) advocated for responses and proactive resolutions to barriers to optimizing the use of DSMES, as "a looming threat to it success is low utilization" (p. 362). Staff and programmatic resources, reimbursement for DSMES services, provider and patient education and buy-in, and patient-related logistical challenges are among the common barriers to better DSMES utilization (p. 364).

Considering the increasing incidence and prevalence of diabetes in the US, Cowie et al. (2018) contend "the fact that one-quarter to one-third of diabetes is undiagnosed and that another third of the total population has prediabetes emphasized the importance of sustained monitoring and improvements in health care delivery" (p. 2).

Juarez et al. (2018) have discussed how the overall health of Hispanics declines with more time living in the United States, as their health approaches the level of natives, and may become even worse. This is despite the well-documented finding that Hispanics have "better health upon arrival to the U.S. compared to their American counterparts" (p. 124). In addition, factors such as migration and "onward integration are major life experiences and present challenges such as discrimination, language proficiency, stress and depression" (p. 125). Such "factors may contribute to adverse health outcomes among Hispanics" (p. 125). This underscores the importance of screening tools

specifically for Hispanic populations living in the U.S. Most importantly, there is an "urgent need to develop and validate simple and inexpensive tools to identify undiagnosed diabetes for Hispanics in the U.S. who constitute a large, diverse and growing population at high risk for diabetes" (p. 125).

Diverse immigrants in the United States also present striking rates of diabetes and obesity, according to the 2010-2016 National Health Survey (NHIS) data (Commodore-Mensah et al., 2018). For example, the "age- and sex-adjusted prevalence of overweight/ obesity was over 72% in Mexico/Central America/ Caribbean and Indian subcontinent immigrants" (p. 70), and both their obesity and rates of diabetes prevalence were higher than that of European immigrants (p. 70). This reflects the growing epidemic of diabetes in Mexico where diabetes is the leading cause of death. Most importantly, distinctions must be made between groups of immigrants who cannot be meaningfully categories as Hispanic/Latino. Indeed, "the presumption that "Hispanics/Latinos" are homogenous can lead to incorrect inferences that mask significant and actionable health information" (p. 8).

Similarly, foreign-born Blacks and various sub-groups of African descent must be distinguished from African Americans or U.S. born Blacks in research on type 2 diabetes (Horlyck-Romanovsky et al., 2018). Data from the New York City Community Health Survey from 2009-2013 explored the odds of obesity and diabetes, while adjusting for factors such as length of residence in the city, age, gender, education, income, partner status, and having children. Findings showed that Blacks who were foreign born had higher odds of having diabetes in comparison to African Americans; yet, they had lower odds of obesity compared to African Americans. "Compared to normal weight, both

overweight and obesity were associated with increased odds of diabetes in total Blacks" (p. 5). On the other hand, underweight was associated with "significant and dramatically lower odds of diabetes" among foreign born Blacks (p. 5).

Such research is important, since from 2000 to 2013, Black immigrants to the United States increased by 56% (Horlyck-Romanovsky et al., 2018). Moreover, it is estimated that by 2016 some 16.5% of the United States' Black population will be foreign-born. For example, in New York City (NYC), "671,333 Black African and Caribbean immigrants constitute 23% of the entire foreign-born population" (p. 1). Of note, "the 8th largest and fastest growing group of foreign-born residents" in New York City is "West Africans (76,710), with a population growth of 60% since 2000" (p. 1). The findings are important, as they contradict prior findings that foreign born Blacks are healthier than US born Blacks. Foreign born Blacks were "at significantly increased risk for diabetes overall and at lower BMI" (p. 7). Horlyck-Romanovsky et al. elaborated on their findings, as follows:

> The mechanisms for this difference warrants further research. Importantly, this study points to the pitfall of combining all Black populations into one category. Future research should examine specific ethnic and cultural backgrounds and the biological and social risk profiles that these differences entail. Failure to do so may bias population estimates and obscure the unique risk profiles of sub-ethnic groups in the African diaspora. (p. 7)

Also, examining Body Mass Index (BMI), Claudel and Bertoni (2018) have acknowledged how members of minority populations have the highest morbidity from chronic diseases. A sample from the Lifestyle Intervention for the Treatment of Diabetes study (LIFT Diabetes) revealed higher BMI among the minority Black and Hispanic participants. Minorities also had lower rates of home computer ownership, in comparison

to Whites. These disparities suggested disparities in access to Web-based interventions (Claudel & Bertoni, 2018).

Others have acknowledged how racial-ethnic minorities, specifically, Blacks, Hispanics and Asians present a higher disproportionate prevalence of diabetes (Canedo et al., 2018). Examining data from the 2013 Medical Expenditure Panel Survey, data analysis showed that utilization of common diabetes care interventions was lower for Hispanics, Blacks, and Asians—as they also suffered from disparities in diabetes quality of care. Factors related to these disparities included lack of insurance, as well as education—while findings underscored the importance of improving access to diabetes quality of care, in order to reduce morbidity and mortality related to diabetes (Canedo et al., 2018).

A study in California conducted between January 2015 to January 2016 found health care disparities between men and women diagnosed with type 2 diabetes (Mesa, 2018). With regard to adherence to treatment recommendations, men showed a much lower level of adherence. Findings showed that "men were found to have lower rates of cancelling or rescheduling a medical appointment; however, they also had a lower rate of showing up to their appointments" (p. 7).

Diabetes is the fifth leading cause of death in New York City (Li et al., 2018), and is the fourth leading cause of premature death among non-Hispanic Blacks and Puerto Ricans. This was compared to diabetes being the sixth leading cause of premature death among other Hispanics, Asian and Pacific Islanders, and non-Hispanic Whites (p. 18).

In a retrospective study of diabetes-related emergency department visits among New York City residents, Lee et al. (2016) found the highest usage of emergency services

among those classified as older, Medicare recipient, and/or Black patients (p. 91). More specifically, the population characteristics that presented by the most vulnerable patients were: the elderly who were at greatest risks for heart attack, ischemic stroke, end-stage renal disease, and non-traumatic lower extremity amputation; Blacks who were at risk for ischemic stroke and end-stage renal disease; and, those in poverty who were at risk for heart attack, heart disease, chronic kidney disease, and lower-extremity ulcers. Lee et al. concluded that with the "rising diabetes prevalence in the United States, identifying novel public health approaches to reducing poor diabetic outcomes is critical" (p. 91).

Mendenhall et al. (2017) explored how type 2 diabetes and mental illness, as well as infectious disease can cluster with metabolic conditions; this is the case across high-income countries (HICs) and low-income and middle-income countries (LMICs)—further principles of the syndemic theory have been cited (p. 951). Generally, the syndemic theory is as follows:

> Syndemic theory provides a framework to advance medicine, health systems, and human rights by bringing multiple fields together to recognize, describe, and appropriately intervene in the complex multiple disease burdens that afflict susceptible populations. (p. 952)

Further, syndemic theory facilitates the researcher doing the following, according to Mendenhall et al.:

> Recognize biological interactions between co-occurring conditions that can belie the true interaction of two or more conditions; describe under what circumstances two or more medical conditions interact and what can be done to intervene; and intervene in ways that address social and medical conditions that interact, and promise to offset the burden of their interaction. (p. 952)

Among their findings, Mendenhall et al. (2017) identified the compounding effect of poverty on the co-occurrences of diabetes and other morbidities, such as depression, HIV, and tuberculosis. In the low-income countries, the standard of care was to prioritize

a specific morbidity, rather than providing "a coordinated person-centered medical care model that addresses individual patients' unique needs," (p. 956), which "can be realized by a health system that promotes high quality or integrated health services" (p. 953). This, along with poverty-aligned conditions of food and housing security, safety, and access to care attributed to the heightened effects of diabetes in these populations. "Syndemics provide an important alternative to non-communicable disease (NCD) epidemiology because the framework addresses how social conditions affect the emergence and medical outcomes related to NCDs such as diabetes, cancer, stroke, and mental illness" (p. 954). From a global standpoint, advocacy for NCDs—specifically diabetes—is needed at this time, as "there is potential for more political and financial attention" in the context of the stabilization of more commonly prioritized infectious diseases like HIV/AIDS and tuberculosis (p. 954).

Towne et al. (2017) evaluated Behavioral Risk Factor Surveillance System (BRFSS) datasets over a five-year period for national trends in self-reported diabetes diagnosis and financial barriers to routine medical management. The value of such research was stated as follows:

> To inform targeted intervention strategies, it is critical to monitor trends in diabetes prevalence over time, factors associated with diabetes, and access to care among those with diabetes. Given that diabetes-related disparities are present access race, ethnicity, poverty, and place (e.g., rurality), there is a need to better understand factors associated with diabetes and associated barriers to treatment—such as cost or scarcity of providers and services—across time and place. (p. 3)

Disparities in both self-reported diagnosis of diabetes and access to care were identified. Groups who experienced greatest prevalence of diabetes were described as having lower incomes, lower levels of education, rural residence, and living in the southern region of the US (the South). In terms of race/ethnicity, it was found that

"minority adults had consistently higher prevalence of type 2 diabetes, with American Indian or Alaska Native, Black or African American, and Hispanic adults having higher rates of diabetes than non-Hispanic White adults" (Towne et al., 2017, p. 12). Regarding financial barriers to care, although this measure experienced a significant decline, it was still found that "health disparities in terms of forgone medical care among those with diabetes were consistently present for those with lower incomes, those who were female, those with less education, and those residing in the South" (p. 12).

Realmuto et al. (2018) adapted the National Diabetes Prevention Program (NDPP) to engage 25 Black and Hispanic males, a population who was identified as underrepresented in prior NDPP outcomes studies. The participants were residents of Brooklyn, Harlem, and the Bronx in New York City, and the interventions took place in NYC Parks and Recreation facilities within the respective communities. Among their results, they found that socialization, relatability (to the group members as well as the facilitator), gender homogeneity of the participants, and placement of the intervention were seen as factors that encouraged participation and completion of the year-long intervention (pp. 983-984). Discouraging factors included inconsistency in participation, and the absence of hands-on development of related skills (such as physical activity and cooking demonstrations) and accessible resources as part of the program (pp. 985-986). Further, they recommended the continued study of the use of mixed methods for data collection, namely focus groups and surveys, which optimized participation among this cohort (p. 987).

Lee et. al. (2016) explored "hypothetical relationships between health literacy, self-efficacy, self-care activities, and health-related quality of life (HRQOL) in patients

with type 2 diabetes" in Korea using a structural equation modeling approach, and proposed it is as a tool to develop patient-level diabetes care programming (p. 83). Applying this model in a cross-sectional study of 459 people with diabetes (gestational diabetes excluded), they found positive, direct associations between health literacy and self-care activities, and indirect relationships between health literacy and self-efficacy, and health literacy and HRQOL. They found that "self-care activities are crucial to the link between health literacy and HRQOL," and recommended a dual focus on health literacy and self-efficacy in improvement efforts for people with diabetes (p. 86).

Guo et al. (2021) investigated the impact of patients' health literacy on their management of diabetes by way of a metanalysis. They found that the higher the patients' level of health literacy, then the higher their engagement in self-monitoring activities. Also, the higher the patients' level of health literacy, then the higher was their level of knowledge about diabetes. Further, the higher the patients' health literacy, then also higher was the patients' self-efficacy, ability to engage in self-care, and level of education.

In a review article, Krebs (2015) described health communication and inquiry as follows:

> Health communication is a young, relevant, and promising applied field of study that examines the influences of human and mediated communication on the delivery of health care and the promotion of health. Health communication inquiry is typically problem-based, identifying serious communication issues that threaten the quality of health care and health promotion, a well as suggesting evidence-based health communication interventions, programs, policies, and practices for improving health outcomes. (p. 1)

Krebs (2015) identifies two areas of health communication inquiry as health care-focused and health promotion focused communication research (p. 1). Krebs further

identifies five levels of health communication inquiry: intrapersonal, interpersonal, group, organizational, and societal (pp. 2-3).

Starting with the premise that "patient-provider communication is an important and potentially mutable component of high quality care for patients with diabetes" (p. 2), White et al. (2016) explored the relationship between the quality of patient-provider communication and medical mistrust among middle aged White, Hispanic, and Black (63%, 24%, and 18%, respectively), uninsured (96%), low income patients with uncontrolled diabetes (glycemic hemoglobin level of $\geq$7.5%) in Tennessee. Health literacy, depression, medical mistrust, and patient-provider communication were assessed using validated instruments for each respective measure. The study sample (n=410) demonstrated medical mistrust, mild depression, and an assessment of poor quality provider communication. Of note, the patients who demonstrated the most mistrust "did not feel as welcomed by their providers into the decision-making process" (p. 7).

Hair and Sripipatana (2021) noted how patient-provider communication encompasses things such as the following: the extent to which the provider is able to demonstrate careful listening to what patients are expressing to them; the degree to which the provider is able to provide the patient with information that is easy for the patient to understand or comprehend; the manner in which the provider is able to demonstrate having some knowledge that is specific to the patient such as the patient's medical history; the ability of the provider to demonstrate having respect for the patient; and the extent to which the provider appears to have sufficient time to spend interacting with the patient. While examining a study involving the management of high cholesterol, findings seem relevant by extension. Specifically, Hair and Sripipatana found that various

dimensions of patient-provider communication, detailed above, were associated with patients showing higher levels of adherence to medical recommendations. Thus, the multifaceted dimensions of patient-provider are important and impact patient behavior.

Rhee et al. (2005) assessed anticipated barriers to diabetes self-management education in the primary care setting among African Americans (89%) who were also low income and largely uninsured (66%). The participants' most commonly anticipated communication disadvantages were poor vision, hearing and low literacy. Difficulties were associated with older age and those reporting elementary level as highest educational attainment. Vision and literacy assessments were advised for patients with diabetes at the beginning of the treatment plan, as well as routine reassessments, with a goal to "help identify and correct problems ... which could ultimately lead to better mastery of diabetes self-management skills" (p. 416).

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D'Agostino et al. (2017) reviewed studies of healthcare communication training focused on the patient's skills rather than the provider, advocating for more research

attention to be directed towards empowering patients to become active participants in their medical appointments and overall plan of care (p. 2). As "provider-patient encounters are interactive and reciprocal," supporting patients in communication skills training empowers them to more "effectively communicate their needs, concerns, and preferences," prompting more positive provider behaviors (pp. 2, 3). An adequately prepared patient is more likely adapt the following behaviors that have been identified as assessments of engagement in healthcare interactions: information seeking and verifying behaviors, assertive statements, and expressing emotions for concerns (p. 2).

Wittink et al. (2018) explored the potential role that patient-facing technology can play in facilitating the disclosure of non-medical concerns that may directly or indirectly affect the effectiveness of the immediate visit, the subsequent plan of care, and overall well-being of the patient. "The arbitrary boundaries of medical care often marginalize if not ignore patients' life circumstances that affect their health, and make it hard for patients to appreciate that their physicians want and need to know about their life circumstances" (p. 2). Three specific barriers to communication were explored: "arbitrary boundaries" in medical appointments (p. 2); the ability of the patient or provider to "identify which stressor, among various, competing stressors" is most appropriate and pertinent (p. 3)", and the norm of provider-driven medical visits (p. 3). Testing a patient-provider communication enhancing technological tool alongside the medical appointments of 60 patients, patients were more likely to disclose non-medical issues affect their health, at an earlier point in their visit, while creating no significant increase in visit time (pp. 7-8).

Baldoni et al. (2017) proposed that "knowledge of empowerment strategies may assist healthcare professionals in their decision making and on the implementation of more effective strategies in healthcare services, providing self-care in [diabetes] and reducing costs for the public healthcare system" (p. 202). These researchers focused on collective empowerment strategies to improve diabetes management in their systematic review of nine studies. Using A1C levels as an indicator of effectiveness, collective empowerment strategies in diabetes management, namely "educational and motivational practices such as education for self-care" have been most effective when the facilitated using adequately trained professionals as well as greater exposure to the intervention (p. 202). Baldoni et al. explained as follows:

> Overall it was observed that studies conducted of up to six sessions showed no reduction of HbA1c with the exception of the Mohamed study which held four sessions, but with a high duration (3-4 h per session) On the other hand, for the studies that showed a significant reduction of HbA1c the number of session ranged from six to 24… Thus, it is observed that the number of sessions is an important variable to empower patients with DM. (p. 210)

In their review, Beverly et al. (2016) identified qualities of effective physician-patient relationships, the value of diabetes self-care communication between the physician and patient, barriers and mediators of self-care communication, and interventions and best practices for improving self-care communication between patient and providers. Of note, they found that patients and providers perceive different challenges in diabetes self-management. For providers, inadequate time, training, access to clinical and community resources that support self-management education and implementation, and psychosocial support for the patient were barriers. Patients were less likely to mention time with their provider as a barrier, but relational themes resonated, both intrapersonal and interpersonal: fear of judgement, guilt, trust, and cultural

competency. Health literacy, psychosocial support, and unreadiness to change were other identified patient barriers.

Beverly et al. (2016) also identified strategies for physicians to improve their communication in a way that positively impacts self-management of diabetes:

- Prioritize the most important information and provide it first
- "Use the phrase 'This is very important…' when discussing key points" to engage the patient's attention
- "Deliver simple, clear, and concrete instructions"
- Use open-ended questions to encourage the patient's feedback
- Incorporate motivational interviewing techniques and tools
- Provide written instructions "to help reinforce learning and information retention"
- Encourage patient to prepare for scheduled visit with a set of questions they may have
- Actively develop support team, in both clinic and community settings (pp. 513-514)

Powers et al. (2021) elaborated on how Diabetes Self-Management Education and Support (DSMES) improves health outcomes, quality of life, and is cost effective—while people with diabetes deserve services. As a consequence, there were specific recommendations for providers, whose communication with patients is essential. The recommendations for providers, were as follows:

1. Discuss with all persons with diabetes the benefits and value of initial and ongoing DSMES.
2. Initiate referral to and facilitate participation in DSMES at the 4 critical times: (1) at diagnosis, (2) annually and/or when not meeting treatment targets, (3) when complicating factors develop, and (4) when transitions in life and care occur.
3. Ensure coordination of the medical nutrition therapy plan with the overall management strategy, including the DSMES plan, medications, and physical activity on an ongoing basis.
4. Identify and address barriers affecting participation with DSMES services following referral. Health policy, payers, health systems, providers, and health care teams.
5. Expand awareness, access, and utilization of innovative and nontraditional DSMES services.

6. Identify and address barriers influencing providers' referrals to DSMES services.
7. Facilitate reimbursement processes and other means of financial support in consideration of cost savings related to the benefits of DSMES services. (p. 352)

Powers et al. (2021) also acknowledged how barriers to diabetes treatment and management can include the provider, as well as health policy, the environment, and the social determinants of health. They also acknowledge how the purpose of DSMES is to "give people with diabetes the knowledge, skills, and confidence to accept responsibility for their self-management," even as this includes "collaborating with their health care team, making informed decisions, solving problems, developing personal goals and action plans, and coping with emotions and life stresses" (p. 353).

In their review of national data from a six-month outcomes study of 1170 Chronic Disease Self-Management Program (CDMP) participants, Ory et al. (2013) found improved patient-provider communication skills, and "decreased depressive symptomology and physical activity limitations" (p. 1296). Ory et al. elaborated, below:

> A greater emphasis on self-management strategies is an essential strategy for avoiding the onset of chronic conditions and helping those with diseases to manage their conditions more effectively in terms of slowing disease progression, reducing complications, and lowering costs. (p. 1259)

Ory et al. (2014) studied the effect of chronic disease self-management training on health outcomes, specifically among middle-aged (50 to 64 years) and older (65 and over) Americans. The research suggested that middle-age was the prime time between these age groups to introduce self-management training in terms of positive impact (p. 38S). The earlier the emphasis on self-management training, the more effective and protective are the effects over time (p. 38S). Ory et al. explained as follows:

> The positive outcomes experienced by participants in the 50 to 64 age cohort confirms that middle-age is a time when individuals who are already experiencing multiple chronic conditions can benefit from learning self-management skills, and reinforces the value of a chronic disease self-management at different life stages. (p. 385)

Further, Ory et al. (2017) explained how "chronic diseases manifest themselves at different time points in different populations" (p. 41). There must be awareness of any opportunity to support self-management education to middle-aged individuals with chronic diseases such as diabetes. Findings can be informative for the development of "disease prevention and self-management interventions to encourage healthful aging before reaching older adulthood" (p. 41).

In this regard, to support, specifically, diabetes self-management, there is the work of the American Association of Diabetes Educators (AADE, 2014). The AADE has widely disseminated their AADE7™ Self-Care Behaviors. The AADE describe these seven behaviors as a vital guide for patients living with diabetes. It is considered a patient centered approach. Further, the AADE described their AADE7™ Self-Care Behaviors, as follows: 1) healthy eating; 2) being active; 3) monitoring; 4) taking medications; 5) problem solving; 6) healthy coping; and 7) reducing risks. Ideally, all adults living with diabetes have been exposed to the by a health educator, nurse, diabetes educator, physician, or other member of the healthcare team.

Statement of the Problem

The problem that this study addresses is the need to improve the lives of diverse male and female adults living with type 2 diabetes by having knowledge of factors that need to be addressed by health educators and other members of the healthcare provider team, such as in the design of culturally and gender tailored interventions. There is a

rationale for focusing on not only health communication, but also health literacy of diverse adults living with type 2 diabetes. There is also a rationale for assessing the prevalence of factors that impact living with diabetes such as obesity (BMI), depression, anxiety, and self-management of the diabetes. Further, there is a rationale for selecting the **two study outcome variables of (1) quality of patient-provider communications and (2) quality of life,** as indicated, below.

Purpose of the Study

The purpose of this study is to identify significant predictors of each of the **two study outcome variables of a # 1 a higher quality of patient-provider communication, and # 2 a higher quality of life**, given the independent variables measurable by the survey parts indicated below.

Research Questions, Survey Part, and Data Analysis Plan

Given a sample of diverse male and female adults (N=72) who respond to a social media campaign (i.e., "**GO TO https://tinyurl.com/SurveyFor-Type-2-Diabetics to take the Survey for Type 2 Diabetics for a chance to win 1 of 3 $100 Amazon gift cards**"), this study will answer the following research questions:

1-What were their demographic characteristics (i.e., gender, age, race/ethnicity, US born or not, education, annual household income, employed or not)?

PART I: BASIC DEMOGRAPHICS (BD-10)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

2-What was their history of being diagnosed with type 2 diabetes, in terms of number of years of ago, medications taken, if engage in home blood sugar testing, and if ever received education on diabetes self-management?

PART II: DIABETES HEALTH BACKGROUND (DHB-5)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

3- How did they rate their overall health status, their Body Mass Index (BMI), weight status, the overall quality of care that they receive for their health, their having insurance (private, other, none), and the overall quality of care they receive from their primary health care provider?

PART III: PERSONAL HEALTH BACKGROUND (PHB-7)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

4-What is the level and quality of their patient-provider communication?

PART IV. PATIENT-PROVIDER COMMUNICATION SCALE (PP-CS-7)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

5- What is their level of health literacy, including their rating of their skill/ability level and level of self-efficacy for relevant behaviors?

PART V: SCALE MEASURING HEALTH LITERACY VIA SKILLS AND SELF-EFFICACY (SM-HL-V-S-SE-16)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

6-What did they report as their level of knowledge for diabetes self-management?

PART VI: TYPE 2 DIABETES SELF-MANAGEMENT KNOWLEDGE (T2D-SMK -1)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

7-What do they report as their stage of change and self-efficacy for performing the AADE7™ Self-Care Behaviors of 1) healthy eating; 2) being active; 3) monitoring; 4) taking medications; 5) problem solving; 6) healthy coping, and 7) reducing risks?

PART VII: STAGE OF CHANGE AND SELF-EFFICACY FOR 7 DIABETES SELF-MANAGEMENT BEHAVIORS (SOC-SEC-M-F-7-DSMB-14)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

8-To what extent do they tend to provide socially desirable responses?

[Note: Regression will control for social desirability]
PART VIII: MORE ABOUT YOU (SOCIAL DESIRABILITY) (MAY-13)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

9-What was the prevalence of symptoms of depression and anxiety in the past year, and was counseling or advice sought out?

PART IX: RETROSPECTIVE DEPRESSION, ANXIETY AND COUNSELING SCALE (R-DACS-3)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

10-What was their rating for their quality of life?

[Note: This is the study outcome variable]

PART X: RATING YOUR QUALITY OF LIFE SCALE (RYQOL-S-1)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

11-Were there any significant relationships among selected demographics (e.g. gender, non-White versus White) and each of **the two study outcome variables of a # 1 a higher quality of patient-provider communication, and # 2 a higher quality of life**?

Data Analysis Plan: Inferential statistics, including independent t-tests and Pearson correlations

12-What were the significant predicators of each of **the two study outcome variables of a # 1 a higher quality of patient-provider communication, and # 2 a higher quality of life**—when controlling for social desirability?

Data Analysis Plan: Backward Stepwise Regression

Theoretical Framework for the Study

There is theoretical framework for the study that rests in multiple theories, as follows: 1) health communication theory (Atkin & Silk, 2014; Berry, 2006); 2) the stages of change theory within the Transtheoretical model of behavior change (DiClemente & Velasquez, 2002; Prochaska & DiClemente, 1983); and, 3) self-efficacy theory within the social cognitive theory (Bandura, 1977). The measures selected for use in the study reflect the importance of these key theories.

Delimitations

This study will be limited to diverse adult men and women who indicate having been diagnosed with type 2 diabetes—and complete the survey. Participants will need to have provided data for the study outcome variables, as well.

Limitations of the Study

The requirement of having access to a computer and the Internet is the main study limitation, while additional limitations involve the study using a sample of convenience. Also, there may be bias from those who volunteer for study participation, as they may have certain characteristics, such as potentially being more invested in the topic of diabetes, or more medically compliant and adherent, or more motivated to win the study prize of an Amazon gift care in the closing study lottery. These limitations must be kept in mind when evaluating the study, while Chapter V will present other emergent study limitations.

Conclusion

This first chapter of the dissertation has served to introduce the topic of focus for the research. In addition, the chapter provided the statement of the problem, purpose of the study, as well as the research questions, survey parts and data analysis plans. The chapter also provided the study's delimitations, limitations, and guiding theoretical framework for the study.

The next chapter, II, will provide a review of pertinent literature, while Chapter III provides the study methods and procedures. Thereafter, results will appear in

Chapter IV. Finally, chapter V will provide the study summary, discussion of results, implications, recommendations and a conclusion.

Chapter II

REVIEW OF THE LITERATURE

This chapter will provide a review of the literature relevant to this dissertation's focus on type 2 diabetes. The topics covered include the following: **(**1) prevalence of type 2 diabetes, and disparities by race, ethnicity and geography; (2) interventions to address diabetes; (3) addressing diabetes with obesity, heart disease, depression, or other conditions—and related research; (4) the focus on patient health literacy, health communication and the role of providers; and, (5) the critical role of patient self-care behaviors and adherence factors.

I. Prevalence of Type 2 Diabetes, and Disparities by Race, Ethnicity, and Geography

Our society stands poised to witness an increase in diabetes in the U.S. from 22.3 million in the population) in 2014, to 39.7 million in 2030, to 60.6 million by the year 2060—as most distressing statistics (Powers et al., 2021, p. 351).

Prior US morbidity and mortality data suggested that diabetes is the seventh leading cause of death, accounting for 80,058 lives in 2016 (Heron, 2018). Among individuals identifying as non-Hispanic American Indian or Alaska Native, diabetes was the fourth cause of death, and among individuals identifying as non-Hispanic Black, non-Hispanic Asian or Pacific Islander, and Hispanic, it was the fifth leading cause (p. 12). More generally, diabetes was most prevalent among individuals aged 45 and older (p. 10).

In their review of the Centers for Disease Control and Prevention's (CDC) 2016 National Health Interview Survey (NHIS), McKeever et al. (2018) discussed the findings

related to the prevalence of diagnosed diabetes in persons aged 18 years and older. Discussion was based on supplemental questions added to the 2016 version of the NHIS to distinguish diabetes type, as the survey is based on self-reported data and not all individuals living with diabetes demonstrate their awareness. Of the randomly selected respondents who reported a diagnosis of diabetes (N = 3,519), 90.9% indicated a medical history of type 2 diabetes (p. 359). The age groups most impacted were individuals 65 years (19.62%), followed by ages 45 to 64 years (11.03%). Persons identifying as non Hispanic Black (11.52%) and Hispanic (9.07%) were more likely to be categorized as having type 2 diabetes, as compared to persons identifying as non-Hispanic White (7.99%) or non-Hispanic Asian (6.89%). Educational attainment above high school was also associated with decreased prevalence (<0.001) (p. 360).

The value of this attention to the distinction of diabetes classifications when discussing prevention, prevalence and management can be summarized as follows, as per McKeever et al. (2018):

> Understanding the prevalence of diagnosed diabetes by type is important for monitoring trends, planning public health responses, assessing the burden of disease for education and management programs, and prioritizing national plans for future type-specific health services... (p. 359)

Offering more of a global perspective on diabetes prevalence, Dagenais et al. (2016) studied the prevalence of diabetes among participants of the Prospective Urban and Rural Epidemiological (PURE) study (N=119,666), representing individuals ages 35 to 70 years living in 18 countries. Based on 2006 World Bank Income classifications, the selected countries were representative of diverse ethnicities, community settings, and most specifically, the following economic settings: low-income, lower-middle income, upper-middle income, and high-income. Diabetes prevalence among participants, as

assessed by self-reported status and having a fasting hemoglobin A1C ≤7%, was 11% and associated with male gender, a BMI over 29, having less than high school or secondary education, family history, and urban residency (pp. 782, 785). Comparatively, Dagenais et al. found prevalence to be highest (12.3%) in low-income countries, and lowest (6.6%) in high-income countries ($p<0.0001$) (p. 782).

Commodore-Mensah et al. (2018) examined the 2016 NHANES data obtained by respondents who indicated being born outside of the US (N = 41,717) to determine hypertension, overweight/obesity, and diabetes prevalence amongst this subset (p. 2). Geographic representation of the participants were as follows: Europe (12.5%), South America (6.6%), Mexico/Central America/Caribbean (47%), Russia (2.7%), Africa (5%), Middle East (3%), Indian subcontinent (6.5%), Asia (7.5%), and Southeast Asia (9%). In addition to a focus on distinctive and exclusive geographic regions of birth, other measures of interest included self-reported BMI, age, sex, years of US residence (<10 years or ≥10 years), health insurance status, and income (p. 2). Consistently, the participants reporting birth in the Mexico/Central America/Caribbean region had higher age and sex-adjusted prevalence of high BMI (70.7%), hypertension (27.7%), and diabetes (11.6%). Those from the Indian subcontinent, however, displayed the highest prevalence in diabetes (14.3%, as compared to those from Russia at 5.2%) and overweight/obesity (77.6%, as compared to Asia at 55.2%). African-born participants had the highest prevalence of hypertension (28.8%, as compared to the South American-born at 20%). Immigrants from Southeast Asia "were distinct and had a significantly higher prevalence of risk factors than other Asian immigrants"; this suggested that "migration-related changes in health behaviors may be more pronounced among Southeast Asian

immigrants and warrants culturally-tailored public health strategies" (p. 8). Highlighting consistent differences in prevalence of hypertension, overweight/obesity, and diabetes between the Mexican/Central American/Caribbean immigrants and South American immigrants, Commodore-Mensah et al. also offered insight into the potential error in the often ambiguous Hispanic ethnic category, in terms of measuring and treating the chronic conditions of interest, as follows:

> From a clinical perspective, the presumption that "Hispanics/Latinos" are homogeneous can lead to incorrect inferences that mask significant and actionable health information. The variation could be explained by differences in diet, acculturation, or differences in pre-migration contexts of immigrants. A healthcare provider who simply identifies a patient as "Hispanic/Latino" without probing the specific cultural background, diet and perceptions of hypertension and diabetes misses a critical opportunity to provide culturally-sensitive and patient-centered care.... (p. 9)

Commodore-Mensah et al. (2018) also noted that, aside from the prevalence data being measured by self-report, other limitations of this study included the inability to determine the point in the immigration process where the risks were developed; and the smaller representation of immigrants from Russia, Africa, and the Middle East regions in the overall study population was another important study limitation (p. 9).

To better understand geographic racial disparities in diabetes prevalence in New York City (NYC), Lee et al. (2018) analyzed the emergency room records of individuals—who had at least one visit in a hospital in New York State between the years 2009 and 2013, and an address in a NYC Census tract. People living in institutional settings (i.e., long-term care and correctional facilities) were excluded from this cross-sectional study (p. 462). Prevalence for type 1 and type 2 diabetes was evaluated for both children and adults, as per a history of a primary or secondary International Classification of Diseases, Ninth Revision (ICD-9) coding for diabetes (p. 462). Of the individuals with

type 2 diabetes (N = 530,662), the majority were over the age of 18 years (N = 528,868). Of note, type 2 diabetes in children was measured between 10 and 17 years of age. Together, the overall type 2 diabetes prevalence among this group was 10.5% and 0.11% for adults and children, respectively (p. 463). Prevalence of type 2 diabetes in African American children (42%) was higher than that of type 1 diabetes for this same group (31%), which is an anomaly in diabetes prevalence among children and represents a disparity beginning in childhood (p. 463). Through a multivariate analysis, association were observed between higher type 2 prevalence in communities that were low income ($P < 0.001$), more elderly residents ($P < 0.001$), African American neighborhoods ($P < 0.001$), and with exception of the pediatric population, "fast food swamps" ($P < 0.001$) (pp. 463 – 464). Specific to type 2 diabetes prevalence among adults, the statistically significant variables in were age and income (p. 467). Lee et al. recommended "a more thorough investigation of genetics, health behaviors, and cultural influences should be considered for type 2 diabetes" interventions (p. 468).

Based on federal quality reports on US health outcomes and trends, Fiskella and Saunders (2016) provided a critical review of health disparities as related to race and ethnicity (p. 376). They discussed the impact that the implementation of the Affordable Care Act on the reduction of uninsured Americans, thereby improving access to care (p. 377). Fiskella and Saunders concluded that addressing "disparities in access is a critical step toward improving downstream health care disparities" (p. 377).

II. Interventions to Address Diabetes

Ferdinand and Nasser (2015) discussed diabetes prevalence and management in the context of racial and ethnic disparities based on data collected in major studies for a

more broad, multiethnic and geographic representation, including: the National Health and Nutrition Examination Surveys (NHANES), the Jackson Heart Study, the Framingham Heart Study, Dallas Heart Study, Boston Area Community Health (BACH) survey, and the CONFIDENCE trial. Ferdinand and Nasser began by arguing that, while diabetes has consistently been a leading cause of death in the US for several years, "the true burden probably was – and remains – under-reported" due to the strong associations between diabetes and other commonly reported primary causes of death, specifically cardiovascular disease, hypertension, and kidney failure, where diabetes was a co-morbid condition in up to 40% of these incidences (p. 914). Trends identified in this review of the NHANES data included increased obesity and diabetes (p. 914). Beyond prevalence, disparities were identified in efficacy and modifications to pharmacological interventions, complications, and preventative care and health behaviors such as physical activity and diet (pp. 915-916). The findings were that in the midst of the upward trend of diabetes prevalence, that the "rates are higher in minority populations, especially African Americans" (pp. 920-921).

Ferdinand and Nasser (2015) advocated for the interventions targeting both clinicians and patients/communities to more effectively improve diabetes management among ethnic minorities in the US, and ultimately eliminating ethnic disparities. Their final recommendation was as follows:

> Interventions to address disparities in diabetes care in minority patients should couple clinician-focused programs with broader, multi-level approaches that target patients and communities to improve diabetes outcomes and promote healthy behavior. In time, the emerging results from studies to explore and eliminate barrier to optimal diabetes care for minority patients will be incorporated into the standard-of-care, with the aim of improving health at both individual and national levels. (p. 921)

In their Standards of Medical Care in Diabetes–2019, the American Diabetes Association (ADA, 2019) has recommended that, in addition to the adaptation of clinical evidence-based diabetes management guidelines, other systems-level improvements are needed to improve diabetes-related clinical outcomes, including: adapting more patient-centered behaviors among the care team (i.e., collaborative goal-setting with patients and care management); expanded modes of patient access to care team (i.e., telemedicine and secure online portals); use of evidence-based diabetes self-management education and support (DSMES); medication adherence support; quality measurement and improvement (associated with having health insurance), and routine patient-level assessments of social determinants of health (pp. S8-S9). Regarding Diabetes Self-Management Education and Support, known widely as DSMES, the ADA (2019) stated the following:

> Successful diabetes care also requires a systemic approach to supporting patients' behavior change efforts. High-quality diabetes self-management education and support (DSMES) has been shown to improve patient self-management, satisfaction, and glucose outcomes. (p. S9)

The ADA has advocated for diabetes self-management education and support, or DSMES—as such interventions "facilitate the knowledge, skills, and abilities necessary for optimal diabetes self-care and incorporate the needs, goals, and life experiences of the person with diabetes" (p. S47). More broadly, the ADA made the following recommendations about optimizing diabetes management through specific lifestyle behaviors that support diabetes wellness, as follows:

> Lifestyle management is a fundamental aspect of diabetes care and includes diabetes self-management education and support (DSMES), medical nutrition therapy (MNT), physical activity, smoking cessation counseling, and psychosocial care. Patients and care providers should focus together on how to optimize lifestyle from the time of the initial comprehensive medical evaluation, throughout all subsequent evaluations and follow-up, and during the assessment of complications and management of co-morbid conditions in order to enhance diabetes care.... (p. S46)

The ADA (2019) further provided the following recommendation, as it relates to the delivery of lifestyle management treatment for long-term impact:

> Lifestyle intervention programs should be intensive and have frequent follow-up to achieve significant reductions in excess body weight and improve clinical indicators…. (p. S48)

III. Addressing Diabetes with Obesity, Heart Disease, Depression, or Other Conditions and Related Research

Numerous conditions may co-occur with diabetes, including obesity, necessitating weight management. Specifically, weight management is deemed an effective way to improve diabetes outcomes, specifically a better A1C—as a key indicator, as well as better cholesterol control (ADA, 2019, p. S48). The ADA has recommended that practical strategies such as *the plate method* that promote good nutrition and a healthy weight should be offered especially to individuals who are not using insulin, lower health literacy, or elderly (p. S48). Medication and surgical procedures may also be options

Rosenberg et al. (2014) indicated that "a common group of illnesses that tend to co-occur is diabetes, coronary heart disease (CHD), and depression" (p. 129). Further, they assert that "having multiple chronic conditions greatly increases health care expenditures," often tripling costs for individuals having three or more chronic conditions (p. 129). Rosenberg et al. described the TEAMcare trial, a primary care-based intervention to address the management of the aforementioned co-occurring chronic conditions as follows:

> This team-based and integrated intervention focused on managing depression and improving control of blood glucose levels, blood pressure and lipids via enhanced medical management of chronic disease and supporting patient in achieving personal self-care goals involving exercise, diet, weight loss, smoking cessation, and behavioral activation. Self-care targets were individualized and included goals for self-monitoring of blood pressure and blood glucose levels, as

> well as changing health behaviors (exercise, diet). Given the widely understood difficulty in changing multiple behaviors simultaneously, primary emphasis was place on pharmacologic management of blood pressure, glycemic control, lipids and depression. (p. 130)

Rosenberg et al. (2014) used a study sample (N = 214; N = 185 completers) that was recruited from 14 primary care practices in the state of Washington who had "one or more measures of poorly controlled disease within the past 12 months including LDL cholesterol >130 mg/dl, glycated hemoglobin 8.5%, as well as blood pressure >140/90 mmHg on two separate visits within 12 months" (p. 130). Additionally, all participants were screened for depression using the Patient Health Questionnaire (PHQ) - 2 standardized tool, and only those with a positive score were included. Patients who were terminally ill, long-term care residents, in active psychiatric care, pregnant or breast-feeding, preparing for weight loss surgery in the next three months, had a severe hearing impairment, serious mental health diagnosis, or symptoms of mental confusion were excluded (p. 130). The subjects were randomly divided into two groups: enhanced usual care (N = 92), where patients continued usual care plan with their primary care provider with mental health screening and referral, and intervention group who received nurse-led diabetes education and care plans that included patient-involved goal-setting (N = 93). Nurses in the intervention group received weekly supervision by a primary care physician and a psychiatrist "who made recommendations regarding medications to improve disease control that were communicated to the patient's primary care physician by the nurse" (p. 130). A secondary study outcome was to improve lifestyle behaviors that support improved disease management, such as "diet quality (servings of fruit and vegetables, servings of high-fat foods), and physical activity" (p. 130).

Finally, Rosenberg et al. (2014) explained how participants were reassessed for clinical and lifestyle changes after 12 months. Poisson regressions were performed to "examine the relationship of the intervention with each health behavior outcome from the two tools used to measure them—the Summary of Diabetes Self-Care Activities Measure (SDSCA) and the International Physical Activity Questionnaire (IPAQ) (p. 131). The subjects in the intervention group showed the most improvements in their healthy eating and physical activity as compared to the enhanced usual care group (p. 132).

Burns et al. (2015) examined the relationships between coping and key diabetes-associated mental health risks: depression, anxiety, and diabetes-related distress. The participants of this prospective study (N = 1,691) were recruited from the Evaluation of Diabetes Treatment (EDIT) longitudinal study based in Quebec, Canada (p. 2). EDIT's prospective model was of particular interest because prior related studies had not provided much insight into coping as it relates specifically to type 2 diabetes, and have been cross-sectional, rendering it "unclear whether (a) coping strategies affect mental health, (b) mental health affects coping strategies, and/or (c) a third unmeasured variable affects both coping strategies and mental health in individuals with diabetes" (p. 2). Inclusion criteria were participation in Quebec's health insurance system, English- or French-speaking, a diagnosis of type 2 diabetes, a diagnosis within the past 10 years (self-reported), ages 40 to 75 years, and "being insulin-naïve" (p. 2). General participant characteristics were the mean age of 60.51 years (SD = 8.37), Caucasian (93%), married/living as married (65%), retired (46.1%) or working (39%), overweight (38.2%) or obese (44.4%), and living with a diabetes diagnosis for 4.59 years (SD = 3.10) (p. 2).

Coping strategies evaluated were "task-oriented (e.g. determine a course of actions and follow it), emotion-oriented (e.g. feel anxious about not being able to cope), and avoidance-oriented (e.g. buy myself something) when encountering a difficult, stressful, or upsetting situation" using the 21-item version of the Coping Inventory for Stressful Situations (CISS-21) (Burns et al., 2015, p. 3). This information was collected at baseline, along with depression screening using the PHQ-9 to identify major and minor depression, anxiety screening via the Generalized Anxiety Disorder-7 (GAD-7), and a diabetes-specific mental health condition known as diabetes-related distress using the Diabetes Distress Scale (p. 3). The baseline findings included the following: major depression (N = 93), elevated anxiety (N = 148), and moderate or sever diabetes-related distress (N = 377) (p. 4). Follow up assessments showed that 13% of participants "who had neither major nor minor depression syndrome at baseline" screened positive for major depression (p. 4). Among participants who were negative for anxiety at baseline, 3.4% demonstrated signs of elevated anxiety, and 15.8% of participants previously showing little to no evidence of diabetes-related distress became moderately or severely distressed (p. 4).

In their analysis of the cross-sectional data, Burns et al. (2015) noted that "task-oriented coping was negatively associated with the likelihood of major depression syndrome and elevated anxiety," and "emotion-oriented coping was positively associated with the likelihood of major depression syndrome and elevated anxiety" (p. 5). The prospective analyses showed similar positive associations for emotional-oriented coping, while no relationships were observed for task- or avoidance-oriented coping and the development of major depression (p. 5). According to Burns et al.,

> This pattern of results suggest that mental health conditions may influence task-oriented coping, rather than task-oriented coping influencing mental health…. Indeed, hallmark symptoms of depression, such as behavioral inactivation and lack of motivation, impair one's ability to carry out a host of tasks, presumably including those involved in the management of stressors.... (p. 6)

In the context of addressing mental health among people with diabetes based on the study outcomes, Burns et al. (2015) advised the following:

> Interventionists are encouraged to distinguished between and target specific types of coping strategies because doing so may improve the intervention effectiveness and efficiency…. It is useful to design intervention components that will influence several outcomes whenever possible. From this perspective, emotion-oriented coping may be a suitable construct to target because (a) it was associated with each of the three mental health conditions examined, and (b) depression, anxiety, and diabetes distress are among the most common psychological conditions among people with type 2 diabetes. Results of the present study suggest that targeting emotion-oriented coping may curb the development of all these conditions and thus may eliminate the need for isolated interventions targeting each of depression, anxiety, and diabetes-related distress.... (p. 7)

Demmer et al. (2105) investigated differences in the association between depression, anxiety, and type 2 diabetes by sex using data collected in two longitudinal studies—the first NHANES study, where diabetes diagnosis was generally confirmed via death certificate, self-report, and/or health facility discharge documents (N = 298, 9.2% prevalence), and the Detroit Neighborhood Health Study (DNHS) where diabetes status was confirmed by self-report (N = 192). Among the NHANES sample (53% female; 85% Caucasian; mean age 49 years), women demonstrated more depression and anxiety symptoms, and once adjusted for age, race, education, smoking status, BMI and physical activity, "anxiety symptomology was associated with increased diabetes risk among women" (p. 6). This same trend was observed for depression among women (p. 6). The predominantly Black (88%) DNHS study cohort had a higher diabetes prevalence (18.3%), with men (47%) most likely to exhibit elevated anxiety or depressive symptoms

(p. 6). Between both cohorts, it was observed that the "risk for incident diabetes was consistently higher among women, but not men, with more depressive symptoms" (p. 7). Further, these findings are of value because "this is the first study to show clear sex-specific findings in two separate population-based cohorts" (p. 7).

Harding et al. (2015) explored the associations between cancer risk and diabetes among enrollees in Australian-based national diabetes registry (N = 953,382) between 1997 and 2008. Individuals were registered by a health practitioner and classified as type 1 (8.5%) or type 2 (91.5%) based on clinical diagnosis, or in the case of missing data, specific age, insulin status and insulin initiation timeline were used to assign them to either group (p. 265). Cancer incidence was measured only for "the first occurrence of cancer, or death from cancer if that was the first time the cancer had been reported" (p. 265). Poisson models were used to determine standardized incidence ratios (SIRs) and standardized mortality ratios (SMRs) for "cancer incidence and mortality in the diabetic population," while also monitoring for "the possibility of early detection bias and reverse causality" (p. 266). SIR results among all individuals with type 2 diabetes were significant "for all cancers, excluding brain, anal (females), and testicular cancers, and esophageal cancer (females)," while prostate and melanoma cancers showed "significant decreased risks" (p. 266). Liver and pancreatic cancers had the highest incidence risks. Regarding increased mortality rates among individuals with type 2 diabetes, stomach, gallbladder, and non-Hodgkin's lymphoma in females, and pancreas, liver, kidney, and Hodgkin's lymphomas overall showed significance (p. 266). It was recommended that cancer screening for patients with diabetes be "emphasized in clinical practice" in consideration to these findings of increased cancer risk (p. 269).

In their review of a growing body of research that explores the association between metabolic syndrome (diabetes) and cancer, Bellastella et al. (2018) focused on the common soil hypothesis. This hypothesis claims that the metabolic syndrome can serve as a surrogate marker for dietary risk factors for cancer; it is a potential sentinel for the varied harmful effects of an unhealthy diet, which leaves individuals susceptible to illness. Such individuals may first manifest metabolic abnormalities (e.g., visceral obesity, hyerglicemia, hyupertension, and dyslipidemia) that precede the occurrence of cancer. They explain how the state of low-grade inflammation, resulting from unhealthy dietary patterns, may serve to promote the development of metabolic abnormalities. These abnormalities, over time, may serve to reduce the period for the manifestation of cancer. Hence, a metabolic syndrome generally precedes clinical evidence of cancer (p. 395).

IV. The Focus on Patient Health Literacy, Health Communication, and the Role of Providers

Dickinson et al. (2017) discussed the recommendations of a joint task force formed between the American Diabetes Association (ADA) and the American Association of Diabetes Educator (AADE) regarding the role and impact of language and communication in diabetes management. Factors to be considered include "how we talk to and about people with diabetes," as this "plays an important role in engagement, conceptualization of diabetes and its management, treatment outcomes, and the psychosocial well-being of the individual" (p. 1790). The recommendations focused on a role for "person-centered and strengths-based communication" (p. 1791). This is preferred to disease- and weakness-focused communication that "shames and judges,"

while “contributing to diabetes distress, and ultimately slowing progress in diabetes outcomes” (p. 1797).

When communicating with individuals about diabetes care, in addition to endorsing “nonhandicapping language,” the joint task force recommended that care providers and other health professionals consider employing language with specific features (Dickinson et al., 2017). Language should be characterized by the following: (1) being neutral, nonjudgmental, and based on facts, actions, or physiology/biology; (2) being free from stigma; (3) being strengths-based, respectful, and inclusive, while imparting hope; (4) serves to foster collaboration between patients and providers; and (5) is person-centered (p. 1792). Dickinson et al. reinforced the relevance of attention to routine communication between health care provider and patient as “the paradigm of diabetes care and education is moving” toward “an approach where people with diabetes are the central members of their care teams, experts on their experiences, and integral to the management of their disease” (p. 1797).

White et al. (2015) discussed findings of the prospective, randomized controlled Partnership to Improve Diabetes Education (PRIDE) Study, “a trial evaluating a literacy-sensitive communication intervention” with 10 Tennessee-based health department clinics (p. 1). The PRIDE Study focused on impact of health communication training for clinical staff, addressing health literacy, limited literacy and numeracy, communication best practices during patient encounters, and “effective use of medical interpreters” (p. 3). Staff at five of the 10 clinics received the specialized health communication training as an intervention (p. 3). Patient participants (N = 408) met the following inclusion criteria: type 2 diabetes diagnosis having an A1C $\geq$7.5%, ages 18 to 85 years, spoke English

and/or Spanish, agreement to participate in study (2 years), while having no poor vision, limited life expectancy (≤24 months), and no clinically significant memory or psychosis (p. 3). In addition to demographic data, relevant anthropometric and clinical data were collected. Several tools were used in full or in part to assess health literacy, medication adherence, treatment satisfaction, nutrition and physical activity behaviors, and responding self efficacy and stage of change (p. 4). Final characteristics of the participants were, as follows: female (61%), Caucasian (63%), up to high school level education, uninsured (96%), age 49.7 years (SD = 9.5), mean BMI 35.7, mean A1C 9.6% (SD = 2.1), nine years since diagnosis (SD = 7.1). White et al. reported that the logistic regression analyses adjusted for age, race/ethnicity, gender, education, insurance, income, years since diagnosis, treatment assignment, literacy level, and insulin status—while showing strong associations between reporting greater diabetes treatment satisfaction and the following: 1) higher communication, decision-making, interpersonal style, Communication Assessment Tool (CAT) scores, and 2) lower medication non-adherence (p. 6). White et al. elaborated, below:

> In this sample of predominantly uninsured, low-income, diabetes patients, we observed significant associations between patient's perceptions of the quality of provider communication and several diabetes-related outcomes. Communication quality in the study was reflective of the provider's ability to communicate clearly, effectively elicit patient concerns, explain results of laboratory and exam findings involve the patient in decision making, spend adequate time with the patient, and demonstrate compassion and concern…. Greater performance in these areas was significantly associated with higher diabetes treatment satisfaction and less medication non-adherence.... (p. 6)

White et al. (2015) advised, "Effective heath communication in these settings may be an important component of high quality care for vulnerable populations" (p. 7). Results supported "a need for improvements in the patient-provider interaction during public health encounters" for individuals with diabetes (p. 6).

V. The Critical Role of Patient Self-Care Behaviors and Adherence Factors

In their systematic review, Mayberry et al. (2016) examined peer-reviewed studies published between January 2011 and March 2016 that focused on major type 2 diabetes self care behaviors by race/ethnicity, specifically among participants identifying as Black, Caucasian, or Hispanic (p. 2). Mayberry et al. suggested "adherence to self-care may be the most readily modifiable mechanism contribution to disparities in diabetes control" in comparison to factors that have been documented to contribute to racial/ethnic disparities in diabetes care (p. 2). Significant disparity patterns identified among Hispanics (compared to non-Hispanic White and non-Hispanic Black subjects) included healthier diets, specifically greater fruit and vegetable intake; less medication adherence; less self-monitoring of blood glucose and feet; and less smoking. Non-Hispanic Blacks were most likely to engage in self blood glucose monitoring and foot exams—males in particular—and less medication adherence overall. Also, in relation to residential setting, it was observed that "among non-Hispanic White and non-Hispanic Black patients, rural residents were more adherent to medications than urban residents," whereas the opposite trend was seen among Hispanics (p. 7). Recommendations for further research included a focus on the following: "racial/ethnic disparities in diabetes-related problem solving and coping that may be contributing to disparities in other self-care behaviors"—and on other potential contributing "causes of disparities in diabetes control and complications" (p. 9). Their search results did not produce strong evidence regarding a focus coping (p. 9).

To better understand the impact of DSME on A1C and quality of life (QOL) improvement in African Americans with type 2 diabetes, Cunningham et al. (2018) conducted a systematic review and meta-analysis of studies measuring these outcomes.

Studies meeting inclusion criteria (N = 14), including homogenously African American participants or having outcomes reported by ethnicity, and took place in various clinical, community, and/or virtual settings (p. 3). Meta-analysis of A1C outcomes (N = 8 studies) "found no significant impact of DSME on HbA1C in African American DSME participants," presenting a disparity of sorts from DSME outcomes among the general population as well as "ethnic minorities" (p. 10). Studies measuring QOL specifically were unsubstantial in number (N = 5), but overall demonstrated a positive statistically significant relationship with DSME (p. 10). Recommendations based on these findings are to, first, consider "more rigorously designed DSME trials for African Americans and further research to understand what DSME intervention characteristics, if any, consistently contribute to improved HbA1c in this population" (p. 11). Additionally, there is an opportunity to learn more about "QOL and other patient-important outcomes in future DSME research among African-Americans" (p. 11).

Schwartz et al. (2017) discussed the relationship between medication adherence among individuals with diabetes and the patient-centered care model, primarily advocating for the value of seeing medication adherence from the patient's perspective. The concept of intentionally and respectfully co-managing the medication experience of each patient was recommended as a step to not only build upon and strengthen the effective patient-provider relationship; but also as presenting an opportunity to be a support to the patient to identify and address related barriers (p. 37). For whom it applies, medication adherence is a critical part of the diabetes management and risk reduction for potential complications. To this larger point, Schwartz et al. commented, as follows:

> Successful diabetes management requires patients to incorporate complicated medical tasks into their daily routines, make significant lifestyle changes, and track

> progress and difficulties. Given these complexities, diabetes management is not a "do-it-yourself" endeavor: it requires expert guidance and teamwork between patients and providers…. A good relationship fosters communication, improves patients' understanding of illness and treatment, and allows patients to feel comfortable asking questions and participating actively in their own care…. (p. 37)

Another consideration offered was that "patients and providers often have very different perceptions of illness and treatment," and is "also echoed in views of nonadherence" (Schwartz et al., 2017, p. 38). Connecting the patient-provider relationship to improved health among even the patients with the highest medical risks, Schwartz et al. (2017) advised that "aligning agendas by way of effective health communication, empathy, and shared decision-making can facilitate shared goals, better adherence, and potentially better outcomes" (p. 38). Contributions of recent national initiatives that impact patient-centeredness for the expected benefit of improved health outcomes and efficiency of health-related spending (such as Patient-Centered Medical Home, the Patient Protection and Affordable Care Act of 2010) were also discussed (Schwartz et al., 2017).

Conclusion

This chapter has presented a review of literature and research relevant to this study's focus on type 2 diabetes. Specifically, the following topics were covered: **(**1) prevalence of type 2 diabetes, and disparities by race, ethnicity and geography; (2) interventions to address diabetes; (3) addressing diabetes with obesity, heart disease, depression, or other conditions—and related research; (4) the focus on patient health literacy, health communication and the role of providers; and (5) the critical role of patient self-care behaviors and adherence factors.

The next chapter, III, will provide the methods and procedures used in this study.

Chapter III

METHODS

This chapter presents the methods and procedures used in conducting the study, including an overview of the study design. The chapter will include the recruitment of study participants, recruitment procedures, and a description of the study instrument.

Overview of Study Design

This study was done using a cross-sectional design for web-based participation of adults who self-reported a medical history of type 2 diabetes. The surveying platform was Qualtrics.

IRB Approval

The Teachers College, Columbia University Institutional Review Board (IRB) gave a Category 2 approval of this study, or *exempt from IRB Committee review*. IRB protocol number 19-151 was issued on 1/22/2019, permitting online data collection to begin. See **Appendix A** for the IRB approved and stamped Informed Consent and Participants' Rights forms.

Recruitment of Study Participants

Using a social media campaign, the study participants were recruited by email (see **Appendix B**), texting (see **Appendix C**), and social media blasts, as well as printed flyers (see **Appendix D**) posted in community venues over a three-week period during February 2019.

The core messaging used for the social media campaign, whether using email, texting, or flyers included an active hyperlink that landed on the survey page for ease of access for prospective participants. The core message was, as follows:

> **GO TO https://tinyurl.com/SurveyFor-Type-2-Diabetics to take the Survey for Type 2 Diabetics for a chance to win 1 of 3 $100 Amazon gift cards.**

With regard to additional details, Facebook, Twitter, LinkedIn, Instagram, and Pinterest were the social media outlets used for advertising and recruitment. In addition to personal page updates advertising the study, posts were also made on group pages that were likely to include eligible participants, such as active niche diabetes groups and groups that promoted community health.

Email list-serves were used, such as those of churches, and the Research Group on Disparities in Health (RGDH) within the Department of Health and Behavior Studies at Teachers College, Columbia University were utilized for distribution of the recruitment message.

Additionally, brief live presentations were made at churches and community-based educational groups, with survey information made available electronically and via flyers distributed at these venues. For non-formal events, a tablet with the survey's landing page, preloaded, was made available to assist individuals who wished to participate, but otherwise felt challenged in accessing the survey. All recruitment activities asked participants and non-participants alike to share or forward the survey invitation to their contacts.

Other Study Procedures

Starting from the online survey landing page, prospective participants were screened for eligibility upon providing their informed consent (see **Appendix F**). Those

who were eligible were given access to begin the survey, while those who did not meet the inclusion criteria were redirected to a page informing them of this determination.

Study Inclusion Criteria

To be eligible for this study, there were four inclusion criteria that had to be met, as embodied in a screening survey (see **Appendix F**). The participant had to answer YES to each of the following questions:

- Are you an adult age 18 or above?
- Are you able to read and understand English on the 12th grade level?
- Have you been told you have type 2 diabetes?
- Are you able to devote about 20 minutes to this study at this time—for a chance to win one of three $100 Amazon gift cards?

Once all four criteria were confirmed, access to the survey was granted. Individuals who did not meet any of these four criteria were disqualified and received this automated message:

> Thank you for your time, but unfortunately you are not qualified to participate in this study. Feel free to invite others to **GO TO https://tinyurl.com/SurveyFor-Type-2-Diabetics to take the Survey for Type 2 Diabetics for a chance to win 1 of 3 $100 Amazon gift cards.**

Study Incentive

Upon completion of the survey, participants were automatically directed to a different webpage where they were thanked for their time and participation, and offered an opportunity to enter a drawing for one of three $100 Amazon.com gift cards. It was explained that the prize entry webpage served to protect the participants' confidentiality,

as it was inaccessible by the Principal Investigator. By entering their email address, they were also entering the gift card drawing.

The prize entry webpage was administered by the RGDH, whose Webmaster was Dr. Rupananda Mirsa. Three study participants who entered the drawing were randomly selected upon the completion of the survey by a computer program, through which they were also alerted via email with corresponding prize gift card.

Description of Study Participants

While a total of 112 surveys were initiated, 40 were not included in the final study group due to not meeting inclusion criteria (n = 26) or for being incomplete surveys (n = 14). Computer IP addresses were observed for duplicate entries, finding no issues requiring further elimination of cases. The final study sample was 72 adult participants between ages 27 and 79 years old. Demographic data were collected and presented in detail in Chapter IV.

Description of the Research Instrumentation

The nine research instruments used in this study were developed by the Principal Investigator alone, or in collaboration with Dr. Barbara Wallace, dissertation sponsor and Director of the Research Group on Disparities in Health at Teachers College, Columbia University. Other instruments were previously used in studies conducted by the Research Group on Disparities in Health, often developed by Dr. Barbara Wallace. Each instrument was selected for relevance to research questions and for prior established reliability in prior research (i.e., Gesinde, 2019; Hall, 2017), thereby being deemed

appropriate for use with culturally diverse samples, such as the sample intended for this study.

Part I: Basic Demographics (B-10)

This 10-item instrument tool captures participants' demographic data, measuring race/ethnicity, birthplace, skin complexion, age, income, education, and marital status.

Part II: Diabetes Health Background (DHB-5)

This five-item instrument was developed by the Principal Investigator, having been adapted from a prior tool used by Zaldivar (20015) [i.e., Brief Health Background of the Patient with Diabetes]. This short tool measured diabetes-related health status and behaviors. This included years since diabetes diagnosis, diabetes testing and prescribed medication management behaviors; and diabetes self-management education exposure was also measured.

Part III: Personal Health Background (PHB-7)

The Personal Health Background is a standard tool created for use by the Research Group on Disparities in Health. The instrument collected data on participants' self-assessment of their overall health status, weight status, medical insurance, and rating the overall quality of care they receive from my primary healthcare provider. The quality of care is rated on a 6-point Likert (***1_Very poor 2_Poor 3_Fair 4_Good 5_Very Good 6_Excellent)***—which gives rise to a mean, standard deviation, minimum and maximum rating.

Part IV: Patient-Provider Communication Scale (PP-CS-7)

A seven-item instrument consists of nine Likert scales created by Dr. Wallace to measure the participant's assessment of factors related to the quality of care and their provider behaviors that support good communication.

This is a new tool created by the Principal Investigator and the Dissertation Sponsor for use by the Research Group on Disparities in Health (RGDH), while arising from the review of literature. It has seven items rated on a 6-point Likert scale, ranging from 1 to 6, as two sample items demonstrate, below:

> 1-I rate my provider's ability to make me feel welcomed, as though they are glad to see me
> ***1_Very poor 2_Poor 3_Fair 4_Good 5_Very Good 6_Excellent __NA, No Provider***
> 2-I rate my provider's ability to make me feel genuinely listened to, and for being attentive to me
> ***1_Very poor 2_Poor 3_Fair 4_Good 5_Very Good 6_Excellent __NA, No Provider***

This new tool will be assessed for internal consistency using Cronbach's Alpha, while the mean, standard deviation, minimum and maximum scores will be determined.

Part V: Scale Measuring Health Literacy via Skills and Self-Efficacy (SM-HL-V-S-SE-16)

This is a tool created for use by the Research Group on Disparities in Health (RGDH), having been first used in Hall (2018). The tool is rooted in a definition of health literacy provided contained in the Affordable Care of Act of 2010, citing health literacy as the degree to which someone has the capacity to obtain, communicate, process, and understand basic essential health information and services being provided, in order for that person to be able make appropriate health decisions (Hall, 2018). Thus, Hall located the origin of the items created for this scale in that definition.

It has sixteen items—with **8 (odd numbered) items composing the Health Literacy Ability Scale**, and **8 (even numbered) items composing the Health Literacy Self-Efficacy Scale**. All items for either scale are rated on a 6-point Likert scale, ranging from 1 to 6, as several sample items demonstrate, below, illustrate:

> **For seeking out health information,**
> **1**-I would rate my ability as
> ***1_Very poor 2_Poor 3_Fair 4_Good 5_Very Good 6_Excellent***
>
> **2-**And, I would rate my level of confidence for doing this as
> ***1_0% confident 2_20% 3_40% 4_60% 5_80% 6_100% confident***
>
> **For seeking out health services, such as going to a clinic, hospital, or making an appointment to see a medical doctor in their office**
> **3-**I would rate my ability as
> ***1_Very poor 2_Poor 3_Fair 4_Good 5_Very Good 6_Excellent***
>
> **4-**And, I would rate my level of confidence for doing this as
> ***1_0% confident 2_20% 3_40% 4_60% 5_80% 6_100% confident***
>
> **For communicating with a health professional and asking all the questions that I have about my health**
> **5-**I would rate my ability as
> ***1_Very poor 2_Poor 3_Fair 4_Good 5_Very Good 6_Excellent***
>
> **6-**And, I would rate my level of confidence for doing this as
> ***1_0% confident 2_20% 3_40% 4_60% 5_80% 6_100% confident***

Internal consistency using Cronbach's Alpha will be determined for each of the two scales (i.e., **the Health Literacy Ability Scale**, and **the Health Literacy Self-Efficacy Scale**)—along with mean scores, standard deviations, and minimum and maximum scores.

Part VI: Type 2 Diabetes Self-Management Knowledge (T2D-SMK-1)

This is a standard type of scale created by Professor Barbara Wallace for use by the Research Group on Disparities in Health. It involves the use a single item for participants to use to rate their level of knowledge on a 6-point Likert scale, as follows:

1-I rate my level of knowledge for how to care for my Type 2 Diabetes as follows:
1_Very poor 2_Poor 3_Fair 4_Good 5_Very Good 6_Excellent __

This single item tool will permit arriving at a mean level of knowledge, including standard deviation, minimum and maximum.

Part VII: Stage of Change and Self-efficacy for 7 Diabetes Self-Management Behaviors (SOC-SEC-F-7-DSMB-14)

This is was scale created by Professor Barbara Wallace for use by the Research Group on Disparities in Health, while based on the American Association of Diabetes Educators' (AADE, 2014) AADE7™ Self-Care Behaviors 7 key behaviors: 1) healthy eating; 2) being active; 3) monitoring; 4) taking medications; 5) problem solving; 6) healthy coping, and 7) reducing risks.

This tool was previously used by Gesinde (2019) where it served as both a pre-video and post-video viewing rating tool in an e-health video study. It has both a **Stage of Change Scale (with 7 odd items)** and **Self-Efficacy Scale (with 7 even items)** for ratings one's performance of each of the 7 AADE7™ Self-Care Behaviors, as sample questions with their Likert scoring show, below:

1-When it comes to the behavior of ***healthy eating*** (counting your carbohydrates, reading food labels, measuring each serving of food), check the following that most applies to you:

1-a:

Score 1=(precontemplation stage)
_____I am not thinking of doing this behavior at all.
Score 2=(contemplation stage)
_____I am thinking about doing this behavior.
Score 3=(preparation stage)
_____I am preparing to do this behavior.
Score 4=(action stage)
_____I have been doing this behavior for **less than six (6) months.**
Score 5=(maintenance stage)
_____I have been doing this behavior for **more than six (6) months**

1-b-My confidence level for performing this behavior:
1_0% confident 2_20% 3_40% 4_60% 5_80% 6_100% confident

2-When it comes to the behavior of ***being active*** (think about how many times a week do you do any exercise--whether walking, riding a bike, or dong any kind of physical activity, such that your heart beats a little faster, or your breathing increases) check the following that most applies to you:
2-a:

Score 1=(precontemplation stage)
_____I am not thinking of doing this behavior at all.
Score 2=(contemplation stage)
_____I am thinking about doing this behavior.
Score 3=(preparation stage)
_____I am preparing to do this behavior.
Score 4=(action stage)
_____I have been doing this behavior for **less than six (6) months.**
Score 5=(maintenance stage)
_____I have been doing this behavior for **more than six (6) months**

2-b-My confidence level for performing this behavior:
1_0% confident 2_20% 3_40% 4_60% 5_80% 6_100% confident

Regarding internal consistency as found in prior research, for example Gesinde (2019) found the following:

Stage of Change Scale (with 7 odd items) Cronbach's Alpha = .90 (pre-video) and .92 (post video)—suggesting excellent internal consistency, while

likely also reflecting the close association of some of the AADE7™ Self-Care Behaviors.

Self-Efficacy Scale (with 7 even items) Cronbach's Alpha = .94 (pre-video) and .88 (post video)—also suggesting excellent internal consistency, while likely also reflecting the close association of some of the AADE7™ Self-Care Behaviors.

The present study will seek for each of the tool's scales a measure of internal consistency, as well as mean scores with standard deviation, and minimum and maximum scores.

Part VIII: More About You (Social Desirability) (MAY-13)

This instrument was taken from the work of much Crowne and Marlowe (1960), as a 13-item measure of social desirability, being the short form of their original 33-item measure of social desirability. This Crowne and Marlowe reported that the original scale had good reliability using the Kuder-Richardson formula (0.88), as well as a good test-retest correlation (0.89). In this study, it is called More About You (MAY-13) scale. Study participants rate 13 statements as True or False. Regarding scoring, items # 5, 7, 9, 10, and 13 if marked True indicate socially desirable responses; and items # 1, 2, 3, 4, 6, 8, 11, and 12 if marked False indicate socially desirable responses. Each socially desirable response is scored 1, leading to a possible high score of 13. The May-13 scale also gives rise to a mean, SD, minimum and maximum score.

Part IX: Retrospective Depression, Anxiety, and Counseling Scale (R-DACS-3)

This is a standard tool commonly used by Research Group on Disparities in Health (RGDH), as in the research of Lian (2017) and Gesinde (2019), being modified

for the present study. Whereas Lian (2017) asked about depression and anxiety for the past 3 months, 6 months and year, Gesinde (2019) only asked about past year depression—and both asked about seeking out any counseling. This study will ask about past year depression and anxiety, and about seeking out any counseling.

Part X: Rating Your Quality of Life Scale (RYQOL-S-1)

This is a simple one-item tool originally created by Professor Barbara Wallace, and first used by Mecklembourg (2019), subsequently being used in many studies conducted by the Research Group on Disparities in Health (RGDH). Arising from a review of literature, this one-item tool was inspired by the work of Gordon and Siminoff (2010), as they identified multiple areas impacting quality of life, while the following were selected for creating the present tool: physical function, social support, body image, emotional function, coping, cognitive function. While originally intended to assess breast cancer's quality of life, as did Mecklembourg (2019), this single item tool has found value in a wide range of studies relevant to many health disparities.

The emergent tool created has a 6 point Likert scoring, as shown with instructions to participants, below:

> **Please rate yourself, after reading the following:**
>
> Please think about the **quality of your life,** including the following: my **ability to function physically** (my level of strength, tendency to experience fatigue, ability to walk up and down stairs, ability to perform physical activities around the house, ability to move my arms and legs, degree to which I feel pain in my body); my **amount of social support** (number of people I can rely on for help, including in a crisis); my **feelings about my body image** (attractiveness, finding clothing I like to wear); my **emotional functioning** (degree of depression, anxiety, worry, uncertainty); and my **mental functioning** (ability to concentrate, remember things, think clearly). Keeping all of this in mind, **please rate your quality of life at the present time**:

I rate my quality of life as:
__1-Very poor __2-Poor __3-Fair __4-Good __5-Very Good __6-Excellent

What is produced using this short one-item tool is a mean, standard deviation, minimum and maximum score.

Data Analysis Plan

Given a sample of diverse male and female adults (N=250) who responded to a social media campaign (i.e., "**GO TO https://tinyurl.com/SurveyFor-Type-2-Diabetics to take the Survey for Type 2 Diabetics for a chance to win 1 of 3 $100 Amazon gift cards**"), this study will answer the following research questions—*using the data analysis plans indicated:*

1-What were their demographic characteristics (i.e., gender, age, race/ethnicity, US born or not, education, annual household income, employed or not)?
PART I: BASIC DEMOGRAPHICS (BD-10)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

2-What was their history of being diagnosed with type 2 diabetes, in terms of number of years of ago, medications taken, if engage in home blood sugar testing, and if ever received education on diabetes self-management?
PART II: DIABETES HEALTH BACKGROUND (DHB-5)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

3- How did they rate their overall health status, their Body Mass Index (BMI), weight status, the overall quality of care that they receive for their health, their having insurance (private, other, none), and the overall quality of care they receive from their primary health care provider?
PART III: PERSONAL HEALTH BACKGROUND (PHB-7)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

4-What is the level and quality of their patient-provider communication?
PART IV. PATIENT-PROVIDER COMMUNICATION SCALE (PP-CS-7)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

5- What is their level of health literacy, including their rating of their skill/ability level and level of self-efficacy for relevant behaviors?

PART V: SCALE MEASURING HEALTH LITERACY VIA SKILLS AND SELF-EFFICACY (SM-HL-V-S-SE-16)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

6-What did they report as their level of knowledge for diabetes self-management?

PART VI: TYPE 2 DIABETES SELF-MANAGEMENT KNOWLEDGE (T2D-SMK -1)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

7-What do they report as their stage of change and self-efficacy for performing the AADE7™ Self-Care Behaviors of 1) healthy eating; 2) being active; 3) monitoring; 4) taking medications; 5) problem solving; 6) healthy coping, and 7) reducing risks?

PART VII: STAGE OF CHANGE AND SELF-EFFICACY FOR 7 DIABETES SELF-MANAGEMENT BEHAVIORS (SOC-SEC-M-F-7-DSMB-14)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

8-To what extent do they tend to provide socially desirable responses?

[Note: Regression will control for social desirability]

PART VIII: MORE ABOUT YOU (SOCIAL DESIRABILITY) (MAY-13)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

9-What was the prevalence of symptoms of depression and anxiety in the past year, and was counseling or advice sought out?

PART IX: RETROSPECTIVE DEPRESSION, ANXIETY AND COUNSELING SCALE (R-DACS-3)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

10-What was their rating for their quality of life?

[Note: This is the study outcome variable]

PART X: RATING YOUR QUALITY OF LIFE SCALE (RYQOL-S-1)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

11-Were there any significant relationships among selected demographics (e.g. gender, non-White versus White) and each of the two study outcome variables of a # 1 a higher quality of patient-provider communication, and # 2 a higher quality of life?

Data Analysis Plan: Inferential statistics, including independent t-tests and Pearson correlations

12-What were the significant predicators of each of the two study outcome variables of a # 1 a higher quality of patient-provider communication, and # 2 a higher quality of life—when controlling for social desirability?

Data Analysis Plan: Backward Stepwise Regression

Treatment of the Data

Data Management

The data for this study were captured and retrieved from the survey collection platform, Qualtrics. Data was analyzed via SPSS version 25.0 in spring 2019.

Conclusion

This chapter detailed the methods used to conduct this study, including a description of the participants and recruitment strategies employed to retain them. The research questions, instruments, and data analysis plan for each question was also explained.

Chapter IV

RESULTS

This chapter describes the study results in detail. Results in this chapter are organized by research questions, while tables present key data.

Data Analysis Results by Study Question

Results for Research Question #1

What are the demographic characteristics of the participants? (Survey Part I: BD-10)

Part I: Basic Demographics (BD-10)

There were 72 adult participants in this study, with a *mean age of 55.3 years* (Min = 27, Max = 79, SD = 12). The sample (N=72) was 78% (n=56) female, 22% (n=16) male, 71% (n=51) Black/African American, 19% (n=14) White, with 69% (n=50) born in the United States (US). Of the non-US natives, birthplaces included Jamaica (11%, n=8), Nigeria (2.8%, n=3), and Barbados, Guyana, Philippines, and Trinidad & Tobago (each 3%, n=2). Nearly half of the participants were employed (n=35; 48.6%) or self-employed (n=3; 4.2%), with an overall *mean annual household income* of 4.11, closest to *$40,000 to $49,000* (Min = 1-Less than $9,000, Max = 11-$800,000 or more, SD = 1.2). The *mean highest degree or level of school* was 6.11, or closest to *Associate or tech degree* (Min = 1-No schooling, Max = 10-Doctorate degree, SD = 1.99).

See Table 1.

Table 1. *Demographic Characteristics of Sample* (N=72)

	N	%		N	%
What is your race/ ethnicity? (N=72)			**Are you currently employed? (Select all that apply): (N=72)**		
Asian	4	5.6			
Black/African American American	51	70.8	Employed	35	48.6
			Self-employed	3	4.2
Latinx	4	5.6	Unemployed	8	11.1
White	14	19.4	Homemaker	8	11.1
Other	1	4	Student	1	1.4
			Retired	17	23.6
What is your skin color? (N=72)			Disabled/Unable to work	5	6.9
			My annual household income is: (N=72)		
1 - Very dark	1	1.4			
2 – Dark	10	13.9			
3 - Medium to dark	19	26.4	1 - Less than $9,000	9	12.5
4 - Medium to light	21	29.2	2 - $10,000 to $19,000	10	13.9
5 – Light	17	23.6	3 - $20,000 to $39,000	10	13.9
6 - Very light	1	1.4	4 - $40,000 to $49,000	2	2.8
7 – White	3	4.2	5 - $50,000 to $99,999	23	31.9
M=4.19; SD=1.26; Min=1; Max=7			6 - $100,000 to $199,000	16	22.2
			7 - $200,000 to $299,000	1	1.4
			11 - $800,000 or more	1	1.4
My age is (N=72):			***Mean income cat=4.11; SD=1.2; Min=1; Max=11***		
18 – 29	1	1.4			
30 – 39	6	8.3			
40 – 49	18	25	**What is the highest degree or level of school you have completed? (N=72)**		
50 – 59	18	25			
60 – 69	20	27.7			
70 – 79	9	12.5	1 - No schooling	1	1.4
M age=55.3; SD=12; Min=27 Max=79			2 - Less than 8th grade	1	1.4
			3 - Some HS, no diploma	4	5.6
			4 - HS graduate or GED	4	13.9
What gender do you identify with? (N=72)			5 - Some college, no degree	13	18.1
			6 - Associate or tech degree	9	12.5
Female	56	77.8	7 - Bachelor's	16	22.2
Male	16	22.2	8 - Master's	12	16.7
			9 - Professional degree	2	2.8
			10 - Doctorate	4	5.6
			Mean education cat=6.11; SD=1.99; Min=1; Max=10		

Table 1 (continued)

	N	%		N	%
What is your country of origin? (N=72)			**What is your marital status? (N=72)**		
Barbados	2	2.8	1 - Single, never married	21	29.2
Dominica	1	1.4	2 - Married	27	37.5
Grenada	1	1.4	3 - Widowed	9	12.5
Guyana	2	2.8	4 - Divorced	11	15.3
Haiti	1	1.4	5 - Separated	3	4.2
Jamaica	8	11.1	6 - Partnered	1	1.4
Nigeria	3	2.8			
Philippines	2	2.8			
St. Kitts & Nevis	1	1.4			
Trinidad & Tobago	2	2.8			
How many years have you been living in the US? (N=72)					
0 to 9	0	0			
10 to 19	3	1.3			
20 to 29	6	27.3			
30 or more	13	59.1			

Results for Research Question #2

> *What was their history of being diagnosed with type 2 diabetes, in terms of number of years of ago, medications taken, if engage in home blood sugar testing, and if ever received education on diabetes self-management? (Survey Part II: DHB-5)*

Part 2: Diabetes Health Background (DHB-5).

The number of years reported for having a type 2 diabetes diagnosis ranged between 1 and 41 years, with a mean of 11.19 years (SD = 7.539). Of participants (N=72) who reported taking medications for diabetes (n=67), 77.8% (n=56) took pills orally. For home blood sugar self-monitoring, 93% (n=67) reported being advised to test by finger stick, while 12.5% (n=9) reported other testing methods.

See Table 2.

Table 2. *Diabetes Health Background*

	N	%
The number of years ago given a diagnosis of Type 2 diabetes (N=72):		
0 to 4	17	23.6
5 to 9	13	18.1
10 to 19	34	47.2
20 or more	8	11.1
Mean = 11.19; Min = 1; Max = 41; SD = 7.539		
I take the following diabetes medications (check all that apply) (N=72):		
1 – Pill taken orally by mouth	56	77.8
2 – Insulin needle for injection	14	19.4
3 – Insulin pen	19	26.4
4 – I do not take any medication	4	5.6
5 – I am not sure, I do now know	1	1.4
I have been advised to check my blood sugar at home by doing the following (check all that apply) (N=72):		
1 – A finger prick with lancet/sharp needle, placement of blood on a strip, and placing the string in a meter that shows my blood sugar level	67	93.1
2 – A meter to test blood sugar that can be used in places other than the finger	5	6.9
3 – Use of a continuous glucose monitoring system	4	5.6
4 – I do not test my blood sugar at home	3	4.2
5 – I am not sure, I do not know	0	0
Have you ever received education on how to self-manage diabetes? (N=72)		
1 – Yes	63	87.5
2 – No	9	12.5

Results for Research Question #3

How did they rate their overall health status, their Body Mass Index (BMI), weight status, the overall quality of care that they receive for their health, their having insurance (private, other, none), and the overall quality of care they receive from their primary health care provider? (Survey for Part 3: PHB-7)

PART III. Personal Health Background (PHB-7)

The participants reported a mean overall health status self-rating of 3.71 (Min = 2, Max = 6, SD = .830), or closest to *good*. Over half (59.7%, n=43) considered themselves to be overweight, while the mean Body Mass Index (BMI) of 32.73 for obese (Min = 19.20, Max = 51.58, SD = 6.78). Regarding healthcare insurance and assessment of healthcare quality, 98% (n=71) reported having some form of healthcare insurance, with an overall mean healthcare provider quality rating of 4.63 (Min = 1, Max = 6, SD = 1.22) for between *good* and *very good*.

See Table 3.

Table 3. *Health Status, Weight Status, Insurance Status, and Quality of Healthcare*

	N	%
I rate my overall health status as: (N=72)		
1 – Very poor	0	0
2 – Poor	3	4.2
3 – Fair	28	38.9
4 – Good	29	40.3
5 – Very good	11	15.3
6 – Excellent	1	1.4
Mean = 3.71; Min = 2; Max = 6; SD = .830		
I consider myself to be: (N=72)		
1 – Underweight	1	1.4
2 – Normal weight	19	26.4
3 – Overweight	43	59.7
4 – Obese	9	12.5
Mean = 3.71; Min = 2; Max = 6; SD = .830		
Body Mass Index (BMI)		
1 – Underweight (< 18.5)	1	1.4
2 – Normal weight (18.5 to < 25)	19	26.4
3 – Overweight (25 to 30)	43	59.7
4 – Obese (30 or above)	9	12.5
Mean = 32.73=obese; Min = 19.20; Max = 51.58; SD = 6.87		

Table 3 (continued)

	N	%
My type of medical insurance is (select all that apply): (N=72)		
1 – Private	29	59.7
2 – HMO	17	23.6
3 – Medicaid	12	16.7
4 – Medicare	18	25
5 – Not applicable/I have no insurance	1	1.4
6 – Other	7	9.7
Quality of Healthcare		
I rate the overall quality of care I receive from my primary care physician/healthcare provider as: (N=72)		
1 – Very poor	2	2.8
2 – Poor	2	2.8
3 – Fair	8	11.1
4 – Good	15	20.8
5 – Very good	27	37.5
6 – Excellent	18	25
Mean = 4.63; Min = 1; Max = 6; SD = 1.22		

Results for Research Question #4

What is the level and quality of their patient-provider communication? (Survey Part IV: PP-CS-7)

Part IV: Patient-Provider Communication Scale (PP-CS-7)

As a new tool created for first-time use in this study, the internal consistency of the seven-item Patient-Provider Communication Scale (PP-CS-07) was excellent, with a Cronbach's Alpha of .977, while suggesting items were closely related. The mean score of 4.80 (min = 1.86, max = 6.00, SD = 1.14) suggests the participants rated their quality of patient-provider communication *between good and very good, while closest to very good*.

See Table 4.

Table 4. *Level and Quality of Patient-Provider Communication*

	N	%
Cronbach's Alpha (7 items) = .977		
[Mean = 4.80; Min = 1.86; Max = 6.00; SD = 1.14]		
I rate my provider's ability to make participant feel welcomed: (N=72)		
1 - Very poor	1	1.4
2 - Poor	3	4.2
3 - Fair	5	6.9
4 - Good	18	25
5 - Very good	16	22.2
Rating of quality of care (N=72)		
1 - Very poor	2	2.8
2 - Poor	2	2.8
3 - Fair	8	11.1
4 - Good	15	20.8
5 - Very good	27	37.5
6 - Excellent	18	25
Rating of provider's ability to make participant feel welcomed (N=72)		
1 - Very poor	1	1.4
2 - Poor	3	4.2
3 - Fair	5	6.9
4 - Good	18	25
5 - Very good	16	22.2
6 - Excellent	29	40.3
Rating of provider's ability to be attentive (N=72)		
1 - Very poor	1	1.4
2 - Poor	2	2.8
3 - Fair	5	6.9
4 - Good	17	23.6
5 - Very good	24	33.3
6 - Excellent	23	31.9

Table 4 (continued)

	N	%
1 - Very poor	0	0
2 - Poor	5	6.9
3 - Fair	5	6.9
4 - Good	14	19.4
5 - Very good	17	23.6
6 - Excellent	31	43.1
Rating of provider's ability to connect, be "human" (N=72)		
1 - Very poor	1	1.4
2 - Poor	3	4.2
3 - Fair	7	9.7
4 - Good	17	23.6
5 - Very good	17	23.6
6 - Excellent	27	37.5
Rating of provider's ability to promote feelings of trust (N=72)		
1 - Very poor	2	2.8
2 - Poor	2	2.8
3 - Fair	8	11.1
4 - Good	16	22.2
5 - Very good	19	26.4
6 - Excellent	25	34.7
Rating of quality of communication shared from patient to provider (N=72)		
1 - Very poor	0	0
2 - Poor	2	2.8
3 - Fair	3	4.2
4 - Good	19	26.4
5 - Very good	22	30.6
6 - Excellent	26	36.1

Table 4 (continued)

	N	%
1 - Very poor	2	2.8
2 - Poor	3	4.2
3 - Fair	9	12.5
4 - Good	14	19.4
5 - Very good	20	27.8
6 - Excellent	24	33.3

Results for Research Question #5

What is their level of health literacy, including their rating of their skill/ability level and level of self-efficacy for relevant behaviors? (Survey: SM-HL-V-S-SE-16)

Part V: Scale Measuring Health Literacy via Skills and Self-Efficacy (SM-HL-V-S-SE-16)

The Cronbach's Alpha for the **health literacy skills subscale** of the *Scale Measuring Health Literacy via Skills and Self-Efficacy* survey was .915, indicating excellent consistency. The **health literacy skill subscale** mean score was 5.11, or *closest to very good* (Min = 3.63, Max = 6.00, SD = .703). For instance, when asked to rate their skill level for "understanding what I have been told by a health professional," 18.1% (n=13) selected good, 40.3% (n=29) selected very good, and 41.7% (n=30) selected excellent.

The Cronbach's Alpha for the **health literacy self-efficacy subscale** of the *Scale Measuring Health Literacy via Skills and Self-Efficacy* survey was .926, indicating excellent internal consistency. The **health literacy self-efficacy subscale** mean score was 5.33, or *closest to 80% confidence, or very good* self-efficacy (Min = 3.75, Max = 6.00, SD = .650). For instance, when asked to rate their level of confidence in skill of

"understanding what I have been told by a health professional," 41.7% (n=30) were 80% confident, and 48.6 (n=45) were 100% confident.

See Table 5.

Table 5. *Health Literacy Skill and Self-Efficacy*

	N	%
Health Literacy Skill Subscale Cronbach's Alpha (8 items – the first of each pair) = .915 ***[Mean health literacy skill = 5.11; Min = 3.63; Max = 6.00; SD = .703]*** ***Health Literacy Self-efficacy (SE) Subscale Cronbach's Alpha (8 items – the second of each pair) = .926*** ***[Mean health literacy SE = 5.33; Min = 3.75; Max = 6.00; SD = .650]***		
For seeking out health information (N=72)		
I would rate my ability as:		
1 – Very poor	0	0
2 – Poor	2	2.8
3 – Fair	7	9.7
4 – Good	18	25
5 – Very good	27	37.5
6 – Excellent	18	25
And, I would rate my level of confidence for doing this as:		
1 – 0% Confidence	0	0
2 – 20% Confidence	1	1.4
3 – 40% Confidence	4	5.6
4 – 60% Confidence	9	5.6
5 – 80% Confidence	33	45.8
6 – 100% Confidence	25	34.7
For seeking out health services, such as going to a clinic, hospital, or making an appointment to see a medical doctor in their office (N=72)		
I would rate my ability as:		
1 – Very poor	0	0
2 – Poor	2	2.8
3 – Fair	0	0
4 – Good	9	12.5
5 – Very good	23	31.9
6 – Excellent	38	52.8

Table 5 (continued)

	N	%
And, I would rate my level of confidence for doing this as:		
1 – 0% Confidence	1	1.4
2 – 20% Confidence	0	0
3 – 40% Confidence	0	0
4 – 60% Confidence	4	5.6
5 – 80% Confidence	20	27.8
6 – 100% Confidence	47	65.3
For communicating with a health professional, asking all the questions that I have about my health, (n=72)		
I would rate my ability as:		
1 – Very poor	0	0
2 – Poor	1	1.4
3 – Fair	3	4.2
4 – Good	12	16.7
5 – Very good	24	33.3
6 – Excellent	32	44.4
And, I would rate my level of confidence for doing this as:		
1 – 0% Confidence	0	0
2 – 20% Confidence	1	1.4
3 – 40% Confidence	1	1.4
4 – 60% Confidence	6	8.3
5 – 80% Confidence	25	34.7
6 – 100% Confidence	39	54.2
For thinking about what I have been told by a health professional and turning it over in my mind so I begin to understand what is being told to me, (n=72)		
I would rate my ability as:		
1 – Very poor	0	0
2 – Poor	0	0
3 – Fair	3	4.2
4 – Good	13	18.1
5 – Very good	28	38.9
6 – Excellent	28	38.9
And, I would rate my level of confidence for doing this as:		
1 – 0% Confidence	0	0
2 – 20% Confidence	0	0
3 – 40% Confidence	1	1.4
4 – 60% Confidence	8	11.1
5 – 80% Confidence	26	36.1
6 – 100% Confidence	37	51.4

Table 5 (continued)

	N	%
For really understanding what I have been told by a health professional, (N=72)		
I would rate my ability as:		
1 – Very poor	0	0
2 – Poor	0	0
3 – Fair	0	0
4 – Good	13	18.1
5 – Very good	29	40.3
6 – Excellent	30	41.7
And, I would rate my level of confidence for doing this as:		
1 – 0% Confidence	0	0
2 – 20% Confidence	0	0
3 – 40% Confidence	0	0
4 – 60% Confidence	7	9.7
5 – 80% Confidence	30	41.7
6 – 100% Confidence	35	48.6
For being able to memorize and repeat (state it aloud) what I have been told by a health professional (N=72)		
I would rate my ability as:		
1 – Very poor	0	0
2 – Poor	1	1.4
3 – Fair	2	2.8
4 – Good	18	25
5 – Very good	29	40.3
6 – Excellent	22	30.6
And, I would rate my level of confidence for doing this as:		
1 – 0% Confidence	0	0
2 – 20% Confidence	1	1.4
3 – 40% Confidence	2	2.8
4 – 60% Confidence	8	11.1
5 – 80% Confidence	31	43.1
6 – 100% Confidence	30	41.7

Table 5 (continued)

	N	%
For being able to ask health professionals questions that would help me better understand, or completely understand what a health professional has explained to me, (N=72)		
I would rate my ability as:		
1 – Very poor	0	0
2 – Poor	0	0
3 – Fair	3	4.2
4 – Good	13	18.1
5 – Very good	23	31.9
6 – Excellent	33	45.8
And, I would rate my level of confidence for doing this as:		
1 – 0% Confidence	0	0
2 – 20% Confidence	0	0
3 – 40% Confidence	3	4.2
4 – 0% Confidence	6	8.3
5 – 80% Confidence	25	34.7
6 – 100% Confidence	38	52.8
For making the best health decisions for myself, deciding what actions I should take, and telling a health professional what I have decided to do, need to do, or prefer to do, (N=72)		
I would rate my ability as:		
1 – Very poor	0	0
2 – Poor	0	0
3 – Fair	2	2.8
4 – Good	14	19.4
5 – Very good	25	34.7
6 – Excellent	30	41.7
And, I would rate my level of confidence for doing this as:		
1 – 0% Confidence	0	0
2 – 20% Confidence	0	0
3 – 40% Confidence	1	1.4
4 – 60% Confidence	12	16.7
5 – 80% Confidence	22	30.6
6 – 100% Confidence	36	50

Results for Research Question #6

What did they report as their level of knowledge for diabetes self-management? (Survey: T2D-SMK -1)

Part VI: Type 2 Diabetes Self-Management Knowledge (T2D-SMK -1)

The participants (n=7) rated their level of knowledge for how to care for their type 2 diabetes on a scale of 1=very poor to 6=excellent with a mean score of 4.89 (SD = .894: min=3; max=6) for *closest to very good knowledge*. Some 8.6 % (n=6) endorsed fair, 20% (n=14) endorsed good; 45.7% (n=32) endorsed very good, and 25.7% (n=18) endorsed excellent.

Results for Research Question #7

What do they report as their stage of change and self-efficacy for performing the AADE7™ Self-Care Behaviors of 1) healthy eating; 2) being active; 3) monitoring; 4) taking medications; 5) problem solving; 6) healthy coping, and 7) reducing risks?

Part VII: Stage of Change and Self-Efficacy for 7 Diabetes Self-Management Behaviors (SOC-SEC-F-7-DSMB-14)

The Cronbach's Alpha for **Stages of Change Subscale** of the *Stage of Change and Self-Efficacy for 7 Diabetes Self-Management Behaviors* survey was .781, indicating an adequate internal consistency. The *stages of change* mean score was 4.31, most closely aligning with the *action stage* (Min = 1-precontemplation, Max = 5.00-maintenance, SD = .754). For instance, when asked to rate their stage of change for behaviors associated with diabetes risk reduction, 66.7% (n=48) were in maintenance.

The Cronbach's Alpha for the **Self-Efficacy Subscale** was .871, indicating very good internal consistency. The *AADE Self-Efficacy Subscale* mean score was 5.03, or *80% confident* for very good self-efficacy (Min = 2.86, Max = 6.00, SD = .781). For instance, when asked to rate their level of confidence in "the behavior of healthy eating

(counting carbohydrates, reading food labels, measuring each serving of food)," 38.9% (n=28) were 80% confident, and 25% (n=18) were 100% confident.

See Table 6.

Table 6. *Stages of Change and Self-Efficacy for AADE7 Self-Care Behaviors*

	N	%
Stages of Change Subscale Cronbach's Alpha (7 items) = .781		
[Mean = 4.31; Min = 1.57; Max = 5; SD = .754]		
Self-efficacy Subscale Cronbach's Alpha (7 items) = .871		
[Mean = 5.03; Min = 2.86; Max = 6; SD = .781]		
SOC for healthy eating behaviors (N=70)		
When it comes to the behavior of healthy eating (counting carbohydrates, reading food labels, measuring each serving of food), check the following that applies to you:		
1 – Not thinking about behavior (precontemplation)	4	5.6
2 – Thinking about this behavior (contemplation)	9	12.5
3 – Preparing for this behavior (preparation)	8	11.1
4 – Doing behavior <6 months (action)	11	15.3
5 – Doing behavior >6 months (maintenance)	38	52.8
My confidence level for performing this behavior:		
1 – 0% Confidence	1	1.4
2 – 20% Confidence	2	2.8
3 – 40% Confidence	7	9.7
4 – 60% Confidence	14	19.4
5 – 80% Confidence	28	38.9
6 – 100% Confidence	18	25
When it comes to the behavior of being active (think about how many times a week do you do any exercise—whether walking, riding a bike, or doing any kind of physical activity, such that your heart beats a little faster, or your breathing increases), check the following that most applies to you: (N=69)		
1 – Not thinking about behavior (precontemplation)	5	6.9
2 – Thinking about this behavior (contemplation)	8	11.1
3 – Preparing for this behavior (preparation)	13	18.1
4 – Doing behavior <6 months (action)	11	15.3
5 – Doing behavior >6 months (maintenance)	32	44.4

Table 6 (continued)

	N	%
My confidence level for performing this behavior:		
1 – 0% Confidence	2	2.8
2 – 20% Confidence	2	2.8
3 – 40% Confidence	7	9.7
4 – 60% Confidence	17	9.7
5 – 80% Confidence	20	27.8
6 – 100% Confidence	21	29.2
When it comes to the behavior of monitoring (using a blood glucose meter to check your blood sugar, and recording and keeping track of your numbers, etc.), check the following that most applies to you: (N=69)		
1 – Not thinking about behavior (precontemplation)	1	1.4
2 – Thinking about this behavior (contemplation)	4	5.6
3 – Preparing for this behavior (preparation)	5	6.9
4 – Doing behavior <6 months (action)	9	12.5
5 – Doing behavior >6 months (maintenance)	50	69.4
My confidence level for performing this behavior:		
1 – 0% Confidence	0	0
2 – 20% Confidence	0	0
3 – 40% Confidence	6	8.3
4 – 60% Confidence	9	12.5
5 – 80% Confidence	19	26.4
6 – 100% Confidence	35	48.6
When it comes to the behavior of taking medications (specifically those prescribed for your diabetes by a medical professional, and adhering to all instructions for taking medication), check the following that most applies to you: (N=69)		
1 – Not thinking about behavior (precontemplation)	1	1.4
2 – Thinking about this behavior (contemplation)	2	2.8
3 – Preparing for this behavior (preparation)	2	2.8
4 – Doing behavior <6 months (action)	3	4.2
5 – Doing behavior >6 months (maintenance)	61	84.7
My confidence level for performing this behavior:		
1 – 0% Confidence	0	0
2 – 20% Confidence	0	0
3 – 40% Confidence	3	4.2
4 – 60% Confidence	4	5.6
5 – 80% Confidence	17	23.6
6 – 100% Confidence	45	62.5

Table 6 (continued)

	N	%
When it comes to the behavior of problem solving (thinking of ways to prevent high and low blood sugar levels, and what to do if blood sugar levels are too high or too low), check the following that most applies to you: (N=69)		
1 – Not thinking about behavior (precontemplation)	5	6.9
2 – Thinking about this behavior (contemplation)	4	5.6
3 – Preparing for this behavior (preparation)	2	2.8
4 – Doing behavior <6 months (action)	8	11.1
5 – Doing behavior >6 months (maintenance)	50	69.4
My confidence level for performing this behavior:		
1 – 0% Confidence	2	2.8
2 – 20% Confidence	2	2.8
3 – 40% Confidence	2	2.8
4 – 60% Confidence	7	9.7
5 – 80% Confidence	25	34.7
6 – 100% Confidence	31	43.1
When it comes to the behavior of healthy coping (involving the ability to deal with life's stressors in a positive manner, including seeking support, etc.), check the following that most applies to you: (N=69)		
1 – Not thinking about behavior (precontemplation)	4	5.6
2 – Thinking about this behavior (contemplation)	6	8.3
3 – Preparing for this behavior (preparation)	5	6.9
4 – Doing behavior <6 months (action)	5	6.9
5 – Doing behavior >6 months (maintenance)	49	68.1
My confidence level for performing this behavior:		
1 – 0% Confidence	0	0
2 – 20% Confidence	0	0
3 – 40% Confidence	3	4.2
4 – 60% Confidence	4	5.6
5 – 80% Confidence	17	23.6
6 – 100% Confidence	45	62.5

Table 6 (continued)

	N	%
When it comes to the behavior of reducing risks (taking action to reduce the risk of vision loss, heart disease, or an amputation, etc.), check the following that most applies to you: (N=69)		
1 – Not thinking about behavior (precontemplation)	0	0
2 – Thinking about this behavior (contemplation)	7	9.7
3 – Preparing for this behavior (preparation)	9	12.5
4 – Doing behavior <6 months (action)	5	6.9
5 – Doing behavior >6 months (maintenance)	48	66.7
My confidence level for performing this behavior:		
1 – 0% Confidence	0	0
2 – 20% Confidence	1	1.4
3 – 40% Confidence	6	8.3
4 – 60% Confidence	11	15.3
5 – 80% Confidence	27	37.5
6 – 100% Confidence	24	33.3

Results for Research Question #8

To what extent do they tend to provide socially desirable responses? (Survey: MAY-13)

Part VIII: More About You (Social Desirability) (MAY-13)

The mean social desirability of this sample was 8.88 (Min = 1, Max = 13, SD = 2.97), suggesting a *moderate to high level of social desirability*. Social desirability will be controlled for in the regression analysis.

Results for Research Question #9

What was the prevalence of symptoms of depression and anxiety in the past year, and was counseling or advice sought out? (Survey: R-DACS-3)

Part IX: Retrospective Depression, Anxiety, and Counseling Scale (R-DACS-3)

Findings showed in the past year 43.1% (n=31) experienced depression, while 44.4% (n=32) experienced anxiety. Of note, 20.8% (n=15) had sought counseling in the past year.

See Table 7.

Table 7. *Prevalence and Treatment of Depression and Anxiety Symptoms*

	N	%
Do you think you experienced any depression in the past year or 12 months? (N=67)		
Yes	31	43.1
No	36	50
If YES, did you seek out any kind of counseling? (N=67)		
Yes	15	20.8
No	17	23.6
N/A, no experience of depression	35	48.6
Do you think you experienced any anxiety in the past year or 12 months? (N=67)		
Yes	32	44.4
No	35	48.6
If YES, did you seek out any kind of counseling? (N=67)		
Yes	15	20.8
No	17	23.6
N/A, no experience of anxiety	35	48.6

Results for Research Question #10

What was their rating for their quality of life? (Survey: RYQOL-S-1)

Part V: Rating Your Quality of Life Scale (RYQOL-S-1)

The mean quality of life rating was 4.27 (Min = 2, Max = 6, SD = 4.27) for *closest to good quality of life*. This aligns with 27.8 (n=20) participant responses for good, and 37.5% (n=27) of responses for very good as their quality of life ratings.

See Table 8.

Table 8. *Quality of Life Rating*

	N	%
Quality of life rating (N=67)		
1 – Very poor	0	0
2 – Poor	1	1.4
3 – Fair	15	20.8
4 – Good	20	27.8
5 – Very good	27	37.5
6 – Excellent	4	5.6
Mean = 4.27; Min = 2; Max = 6; SD = 4.27		

Results for Research Question #11

Were there any significant relationships among selected demographics (e.g., gender, non-White versus White) and each of the two study outcome variables—higher quality of patient-provider communication and higher quality of life?

To assess relationships among demographic and other selected independent variables with the two outcome variables of this study, independent t-tests and Pearson's correlation analyses were performed.

Independent T-Tests Comparing Groups on Outcome Variable #1 – Higher Quality of Patient-Provider Communication

The Bonferroni Adjustment Significance (.05/9=.006) was p<.006, reflecting the nine groups compared to the **first study outcome variable of higher quality of patient-provider communication**.

Participants with **"No" history of depression in the past year** (n=36) had **a higher mean rating for quality of patient-provider communication** of 5.19 (SD-809) when compared to the lower mean rating for quality of patient-provider communication of 4.37 (SD=1.33) for those who did ("Yes) (n=31) have a history

of depression in the past year—achieving significance at $p < .005$ ($t=2.96$, $df=47.91$).

See Table 9.

Table 9. *Independent T-Tests Comparing Groups for Patient-Provider Communication*

	Patient-Provider Communication			*t*-test		
	N	**M**	**SD**	***t***	**df**	**P**
Gender				.118	70	.907
Female	56	4.81	1.14			
Male	16	4.76	1.18			
US Born				-.441	70	.660
No	22	4.71	.253			
Yes	50	4.83	.159			
Married				-.799	70	.427
No	45	4.71	1.21			
Yes	27	4.36	1.08			
Employed for Wages				1.566	70	.122
No	37	5.00	1.08			
Yes	35	4.58	1.17			
History of Diabetes Education				-1.64	70	.106
No	9	4.22	1.099			
Yes	63	4.88	1.13			
History of Depression (past yr)				2.96	47.91	.005**
No	36	5.19	.809			
Yes	31	4.37	1.33			
Received Treatment for Depression				1.28	65	.204
No	52	4.91	1.11			
Yes	15	4.48	1.28			
History of Anxiety (past year)				1.435	55.778	.157
No	35	5.00	.947			
Yes	32	4.60	1.32			
Received Treatment for Anxiety				.765	65	.447
No	52	4.40	.913			
Yes	15	4.61	1.08			

*p<.05, **p<.01, ***p<.001 Bonferroni Adjustment Significance (.05/9, p=.006), Note: All p values above .006 are considered non-significant, and only those below .006 are considered statistically significant

Independent T-Tests Comparing Groups on Outcome Variable #2 – Higher Quality of Life

When comparing selected groups, using the Bonferroni Adjustment Significance level (.05/9=.006, p<.006), it was fond that **those groups that had a higher of quality of life had**:

A history of receiving diabetes education (n=58, mean=4.4; SD=.877), compared to those who had not such history (n=9, mean=3.44, SD=.877)—achieving significance (t= -3.027, df=65, p=.004).

No history of past year depression (n=36, mean=4.64, SD=.833), compared to those with such a history (n=31, mean=3.84, SD=.860)—achieving significance (t=3.85, df=65, p=.000).

Had not received treatment for depression in the past year (n=52, mean=4.42, SD=.893) compared to those who had received such treatment (n=15, mean=3.73, SD=.884)—achieving significance (t=2.64, df=65, p=.010).

No history of past year anxiety (n=35, mean=4.69, SD=.796), compared to those with such a history (n=32, mean=3.81, SD=.859)—achieving significance (t=4.319, df=65, p=.000).

See Table 10.

Table 10. *Independent T-Tests Comparing Groups for Quality of Life*

	Quality of Life			***t*-test**		
	N	**M**	**SD**	***T***	**df**	**p**
Gender				1.331	65	.188
Female	51	4.35	.868			
Male	16	4	1.095			
US Born				1.634	38.365	.107
No	20	4.55	.887			
Yes	47	4.15	.932			

Table 10 (continued)

	Quality of Life			*t*-test		
	N	**M**	**SD**	***T***	**df**	**p**
Married				-.580	41.48	.565
No	42	4.21	.842			
Yes	25	4.36	1.075			
Employed for Wages				.417	65	.678
No	35	4.31	.932			
Yes	32	4.22	.941			
History of Diabetes Education				-3.027	65	.004**
No	9	3.44	.882			
Yes	58	4.4	.877			
History of Depression (12m)				3.86	65.00	.000***
No	36	4.64	.833			
Yes	31	3.84	.860			
If Received Treatment for Depression				2.64	65	.010*
No	52	4.42	.893			
Yes	15	3.73	.884			
History of Anxiety (12m)				4.319	65	.000***
No	35	4.69	.796			
Yes	32	3.81	.859			
If Received Treatment for Anxiety				2.283	65	.026*
No	52	4.4	.913			
Yes	15	3.8	.862			

*p<.05, **p<.01, ***p<.001 Bonferroni Adjustment Significance (.05/9, p=.006), Note: All p values above .006 are considered non-significant, and only those below .006 are considered statistically significant

Pearson Correlations

Selected independent variables showed a correlation with the first study outcome variables of better quality patient-provider communications (Bonferroni Adjustment Significance, .05/12=.004, p<.004), as follows. The better or higher the quality of patient-provider communication, then

- Older the age (r= .0363, p= .002)
- Higher number of years of diabetes diagnosis (r= .122, p= -.027)
- Higher rating of overall health status (r= .473, p= .000)
- Higher rating of overall quality of health care (r= .856, p= .000)
- Higher health literacy skill (r= .515, p= .000)
- Higher health literacy self-efficacy (r= .437, p= .000)
- Higher knowledge of diabetes self-management (r= .385, p= .000)

For the second outcome variable, the better or higher the quality of life, then

- Older the age (r= .0367, p= .002)
- Better overall health status (r= .594, p= .000)
- Better overall quality of health care (r= .450, p= .000)
- Lower BMI (r= -.37, p= .002)
- Higher health literacy skill (r= .592, p= .000)
- Higher health literacy self-efficacy (r= .528, p= .000)
- Higher knowledge of diabetes self-management (r= .598, p= .000)

See Table 11.

Table 11. *Correlations Between Selected Variables and Patient-Provider Communication and Quality of Life After Controlling for Social Desirability*

	Better Patient-Provider Communication		Better Quality of Life	
	R	P	R	P
Age	.363	.002**	.367	.002**
Education	-.001	.996	.025	.838
Income	.046	.191	.701	.122
Skin Tone	-.101	.399	-.065	.599
Number of years of diabetes diagnosis	.133	-.027***	.267	.829
Overall health status	.473	.000***	.594	.000***
Weight status	-.147	.219	-.27	.027*
Overall quality of health care	.856	.000***	.45	.000***
BMI	-.199	.094	-.37	.002**
Higher health literacy skill	.515	.000***	.592	.000***
Health literacy self-efficacy	.437	.000***	.528	.000***
Higher knowledge of diabetes self-management	.385	.000***	.598	.000***

*p<.05, **p<.01, ***p<.001 Bonferroni Adjustment Significance (.05/12, p=.004)
Note: All p values above .004 are considered non-significant, and only those below .004 are considered statistically significant

Results for Research Question #12

What were the significant predictors a higher quality of patient-provider communication and a higher quality of life—when controlling for social desirability?

A backward stepwise regression analysis was performed to determine predictors of each outcome variables: #1 – better patient-provider communication and #2 – better quality of life. The outcome variables were measured against these 22 ***independent variables***: 1) gender; 2) if US-born; 3) marriage status; 4) employment status; 5) if received diabetes education (yes or no); 6) if experienced depression within the past year (yes or no); 7) if received counseling for depression; 8) if experienced anxiety within the past year (yes or no); 9) if received counseling for anxiety in the past year (yes or no); 10)

age (continuous); 11) highest level of education; 12) annual household income; 13) skin color (dark to light); 14) number of years having a type 2 diabetes diagnosis; 15) overall health status; 16) rating of quality of health care; 17) BMI; 18) health literacy skill; 19) health literacy self-efficacy; 20) type 2 diabetes self-care knowledge; 21) stage of change for diabetes self-management (precontemplation to maintenance); and 22) self-efficacy for diabetes self-management.

Backwards Stepwise Regression

#1 – Backward Stepwise Regression Predicting Better Patient-Provider Communication. Using backward stepwise regression, while controlling for social desirability, better quality patient-provider communication was predicted by:

- Having received diabetes education (B = .491, p = .03)
- Having a higher rating of health care quality (B = .762, p = .000)
- Having higher level of health literacy skills (B = .263, p = .023)
- Being in a lower stage of change for self-care behaviors (B = -.309, p = .004)* Note*: This was in the opposite direction of the correlation, so likely due to the model controlling for other variables in the model

With the R^2= .808, and the AdjR^2= .792, 79.2% of the variance was explained by this regression model.

See Table 12.

Table 12. *Backward Stepwise Regression Analysis Predicting Behavior of Interest #1—Higher Quality Patient-Provider Communication* (N=72)

Variables	**B**	**SEβ**	**p**
Received diabetes education	.491	.221	.03*
Higher rating of quality of health care	.762	.059	.000***
Higher level of health literacy skill	.263	.113	.023*
Lower stage of change for self-care behaviors	-.309	.102	.004**

*p<.05, **p<.01, ***p<.001 R2=.808, AdjR2=.792. 79.2% of the variance explained by this regression model.
F=51.372, p=.000

#2 – Backward Stepwise Regression Predicting Better Quality of Life. Using backward stepwise regression, while controlling for social desirability, better quality of life was predicted by:

- Being female gender (B = -.347, p = .036)
- Having received diabetes education (B = .478, p = .022)
- Not having a past year anxiety (B = -.574, p = .000)
- Having a higher annual household income (B = .142, p = .000)
- Having a lower rating of weight status (B = -.478, p = .000)
- Having higher health literacy self-efficacy (B = .454, p = .001)
- Having a higher rating of knowledge of diabetes self-care (B = .24, p = .015)

With the R^2= .731, and the AdjR^2= .694, 69.4% of the variance was explained by this regression model.

See Table 13.

Table 13. *Backward Stepwise Regression Analysis Predicting Behavior of Interest #2—Higher Quality of Life* (N=72)

Variables	**B**	**SEβ**	**p**
Female Gender	-.347	.162	.036*
Receiving diabetes education	.478	.203	.022*
No anxiety in past year	-.574	.149	.000***
Higher household annual income	.142	.036	.000***
Lower self-rating of weight status	-.478	.109	.000***
Higher health literacy self-efficacy	.454	.131	.001**
Higher knowledge for knowledge of diabetes self-management	.24	.096	.015*
*p<.05, **p<.01, ***p<.001 R2=.731, AdjR2=.694. 69.4% of the variance explained by this regression model. F=19.706 p=.000			

Conclusion

This chapter presented the results of data analysis. The final chapter, V, will present the discussion of the results, following a summary of the study. In addition, the final chapter will present implications and recommendations that follow from the findings, along with study limitations.

Chapter V

SUMMARY, DISCUSSION, IMPLICATIONS, RECOMMENDATIONS, AND CONCLUSION

This chapter provides a summary of the research study, as well as a discussion of the findings. In addition, this chapter presents implications and recommendation, as well as limitations of the study and a final conclusion.

Summary of the Literature Review

Globally and in the United States, type 2 diabetes remains a highly prevalent condition (Cowie, 2021). According to the 2017 National Health Survey (NHIS), some 8.6% of adults in the United States have been diagnosed with type 2 diabetes, constituting 21 million adults or 90.9% of all cases of all types of diabetes (Bullard et al., 2018). It is associated with mortality and co-morbidity—which often goes undiagnosed along with pre-diabetes, compromising efforts to ensure adequate treatment and care (Cowie, 2021).

As per Powers et al. (2021), the "prevalence of diagnosed diabetes is projected to increase in the U.S. from 22.3 million (9.1% of the total population) in 2014, to 39.7 million (13%) in 2030, and to 60.6 million (17%) in 2060" (p. 351). An important distinction involves how about "90-95% of those with diabetes have type 2 diabetes" (p. 351). In addition, this is an "expensive disease" with associated medical costs for caring with a person with diabetes being "2.3 times more than for a person without diabetes" (p. 351).

Juarez et al. (2018) discussed how there is an "urgent need to develop and validate simple and inexpensive tools to identify undiagnosed diabetes for Hispanics in

the U.S. who constitute a large, diverse and growing population at high risk for diabetes" (p. 125). Diverse immigrants in the United States also present striking rates of diabetes and obesity, according to the 2010-2016 National Health Survey (NHIS) data (Commodore-Mensah et al., 2018). Horlyck-Romanovsky et al. (2018) indicated that compared "to normal weight, both overweight and obesity were associated with increased odds of diabetes in total Blacks" (p. 5). Others have acknowledged how racial-ethnic minorities, specifically, Blacks, Hispanics and Asians present a higher disproportionate prevalence of diabetes (Canedo et al., 2018). Factors related to these disparities included lack of insurance, as well as education—while findings underscored the importance of improving access to diabetes quality of care, in order to reduce morbidity and mortality related to diabetes (Canedo et al., 2018).

Mendenhall et al. (2017) explored how type 2 diabetes, mental illness, and infectious disease can cluster with metabolic conditions. Lee et al. (2016) explored "hypothetical relationships between health literacy, self-efficacy, self-care activities, and health-related quality of life (HRQOL) in patients with type 2 diabetes" (p. 83).

Guo et al. (2021) found that the higher the patients' level of health literacy, then the higher their engagement in self-monitoring activities. Also, the higher the patients' level of health literacy, then the higher was their level of knowledge about diabetes. Further, the higher the patients' health literacy, then also higher was the patients' self-efficacy, ability to engage in self-care, and level of education.

White et al. (2016) explored the relationship between the quality of patient-provider communication and medical mistrust among middle aged White, Hispanic, and Black (63%, 24%, and 18%, respectively), uninsured (96%), low-income patients with

uncontrolled diabetes (glycemic hemoglobin level of ≥7.5%). Health literacy, depression, medical mistrust, and patient-provider communication were assessed using validated instruments for each respective measure. Findings showed patients who demonstrated the most mistrust "did not feel as welcomed by their providers into the decision-making process" (p. 7).

Hair and Sripipatana (2021) noted how patient-provider communication encompasses things such as the following: the extent to which the provider is able to demonstrate careful listening to what patients are expressing to them; the degree to which the provider is able to provide the patient with information that is easy for the patient to understand or comprehend; the manner in which the provider is able to demonstrate having some knowledge that is specific to the patient such as the patient's medical history; the ability of the provider to demonstrate having respect for the patient; and the extent to which the provider appears to have sufficient time to spend interacting with the patient. While examining a study involving the management of high cholesterol, findings seem relevant by extension. Specifically, Hair and Sripipatana (2021) found that various dimensions of patient-provider communication, detailed above, were associated with patients showing higher levels of adherence to medical recommendations.

D'Agostino et al. (2017) reviewed studies of healthcare communication training focused on the patient's skills rather than the provider, advocating for more research attention to be directed towards empowering patients to become active participants in their medical appointments and overall plan of care (p. 2). As "provider-patient encounters are interactive and reciprocal," supporting patients in communication skills

training empowers them to more "effectively communicate their needs, concerns, and preferences," prompting more positive provider behaviors (pp. 2, 3).

Powers et al. (2021) also acknowledged how barriers to diabetes treatment and management can include the provider, as well as health policy, the environment, and the social determinants of health. They also acknowledge how the purpose of DSMES is to "give people with diabetes the knowledge, skills, and confidence to accept responsibility for their self-management," even as this includes "collaborating with their health care team, making informed decisions, solving problems, developing personal goals and action plans, and coping with emotions and life stresses" (p. 353).

There is theoretical framework for the study that rests in multiple theories, as follows: 1) health communication theory (Atkin & Silk, 2014; Berry, 2006); 2) the stages of change theory within the Transtheoretical model of behavior change (DiClemente & Velasquez, 2002; Prochaska & DiClemente, 1983); and 3) self-efficacy theory within the social cognitive theory (Bandura, 1977). The measures selected for use in the study reflect the importance of these key theories.

Summary of Statement of the Problem

The problem that this study addresses is the need to improve the lives of diverse male and female adults living with type 2 diabetes by having knowledge of factors that need to be addressed by health educators and other members of the healthcare provider team, such as in the design of culturally and gender tailored interventions.

Summary of Purpose of the Study

The purpose of this study is to identify significant predictors of each of the **two study outcome variables of a # 1 a higher quality of patient-provider communication, and # 2 a higher quality of life**.

Summary of Research Questions

Given a sample of diverse male and female adults (N=72) who respond to a social media campaign (i.e., "**GO TO https://tinyurl.com/SurveyFor-Type-2-Diabetics to take the Survey for Type 2 Diabetics for a chance to win 1 of 3 $100 Amazon gift cards**"), this study will determine:

1-using descriptive statistics, describe the study sample's characteristics.

2-using inferential statistics (i.e., Pearson correlation, independent t-tests), **determine relationships** between selected independent variables with **the two study outcome variables of a # 1 a higher quality of patient-provider communication, and # 2 a higher quality of life**

3-using backward stepwise regression, identify the significant predictors of **the two study outcome variables of a # 1 a higher quality of patient-provider communication, and # 2 a higher quality of life**—while controlling for social desirability?

Summary of Research Instrumentation

The study measure included the following survey parts:

- PART I: BASIC DEMOGRAPHICS (BD-10)
- PART II: DIABETES HEALTH BACKGROUND (DHB-5)
- PART III: PERSONAL HEALTH BACKGROUND (PHB-7)
- PART IV. PATIENT-PROVIDER COMMUNICATION SCALE (PP-CS-7)
- PART V: SCALE MEASURING HEALTH LITERACY VIA SKILLS AND SELF-EFFICACY (SM-HL-V-S-SE-16)
- PART VI: TYPE 2 DIABETES SELF-MANAGEMENT KNOWLEDGE (T2D-SMK-1)

- PART VII: STAGE OF CHANGE AND SELF-EFFICACY FOR 7 DIABETES SELF-MANAGEMENT BEHAVIORS (SOC-SEC-M-F-7-DSMB-14)
- PART VIII: MORE ABOUT YOU (SOCIAL DESIRABILITY) (MAY-13)
- PART IX: RETROSPECTIVE DEPRESSION, ANXIETY AND COUNSELING SCALE (R-DACS-3)
- PART X: RATING YOUR QUALITY OF LIFE SCALE (RYQOL-S-1)

Summary of Research Sample and Procedures

While a total of 112 surveys were initiated, 40 were not included in the final study group due to not meeting inclusion criteria (n = 26) or for being incomplete surveys (n = 14). Computer IP addresses were observed for duplicate entries, finding no issues requiring further elimination of cases. The final study sample was 72 adult participants between ages 27 and 79 years old.

Using a social media campaign, the study participants were recruited by email (see **Appendix B**), texting (see **Appendix C**), and social media blasts (i.e., via Facebook, Twitter, LinkedIn, Instagram, and Pinterest), as well as printed flyers (see **Appendix D**) posted in community venues over a three-week period during February 2019. All materials used the core message, as follows:

> **GO TO https://tinyurl.com/SurveyFor-Type-2-Diabetics to take the Survey for Type 2 Diabetics for a chance to win 1 of 3 $100 Amazon gift cards.**

The process of snowballing followed, while brief live presentations were also made at churches and community-based educational groups.

Summary of Results of Data Analysis

A total of 112 surveys were initiated. However, 40 were not included in the final study group due to not meeting inclusion criteria (n = 26) or for being incomplete surveys (n = 14). Computer IP addresses were observed for duplicate entries, finding no issues requiring further elimination of cases. The final study sample was 72 adult participants between ages 27 and 79 years old.

The mean social desirability of this sample was 8.88 (Min = 1, Max = 13, SD = 2.97), suggesting a *moderate to high level of social desirability*—which may be kept in mind when considering the following findings.

Findings on Demographics, History, Health Status, and Provider Rating

The sample (N=72) was 78% (n=56) female, 22% (n=16) male, with a *mean age of 55.3 years* (Min = 27, Max = 79, SD = 12)—with 71% (n=51) Black/African American, 19% (n=14) White, with 69% (n=50) born in the United States (US). Some 48.6% (n=35) were employed with a *mean annual household income* of 4.11 (SD=1.2) for closest to *$40,000 to $49,000* (Min = 1- < $9,000, Max = 11- $800,000 or more). The *mean level of education* was 6.11 (SD=1.99) for closest to *Associate or tech degree* (Min = 1-No schooling, Max = 10-Doctorate degree).

The mean number of years for having a type 2 diabetes diagnosis was 11.19 years (SD=7.539; Min=1, Max= 41 years). The majority (77.8%, n=56) took pills orally, while 26.4% (n=19) used an insulin pen, and 19.4% (n=14) needle for injection. For home blood sugar self-monitoring, 93% (n=67) reported being advised to test by finger stick, while 5.6% (n=4) advised to use a continuous glucose monitoring system. Their overall health status mean was 3.71 (Min = 2, Max = 6, SD = .830) for closest to *good*. Over

half (59.7%, n=43) self-rated for overweight, while the mean Body Mass Index (BMI) of 32.73 for obese (Min = 19.20, Max = 51.58, SD = 6.78). Some 98% (n=71) had healthcare insurance, with 59.7% (n=29) having private insurance.

They rated the overall quality of care they received from their provider with a mean of 4.63 (Min = 1, Max = 6, SD = 1.22) for between *good* and *very good.*

Findings for Patient-Provider Communication and Health Literacy

Using the new *Patient-Provider Communication Scale (PP-CS-07*, Cronbach's Alpha = .977, high internal consistency, suggesting items were closely related), the mean score was 4.80 (min = 1.86, max = 6.00, SD = 1.14), or patient-provider communication was *between good and very good, while closest to very good*.

Using the *Scale Measuring Health Literacy via Skills and Self-Efficacy (SM-HL-V-S-SE-16),* first, findings with the **health literacy skills subscale** (Cronbach's Alpha = .915, high internal consistency) showed a mean score of 5.11 (Min = 3.63, Max = 6.00, SD = .703) for *closest to very good* health literacy skills. Secondly, findings with for the **health literacy self-efficacy subscale** (Cronbach's Alpha = .926, high internal consistency) showed a mean of 5.33 (Min = 3.75, Max = 6.00, SD = .650) for *closest to 80% confident or very good* health literacy self-efficacy.

Findings on Multiple Dimensions of Diabetes Self-Management

Their level of **knowledge** for how to care for their type 2 diabetes was a mean of 4.89 (SD = .894: min=3; max=6) for *closest to very good knowledge*.

Findings on the *Stage of Change and Self-Efficacy for 7 Diabetes Self-Management Behaviors (SOC-SEC-F-7-DSMB-14)* scale showed: **Stages of Change Subscale** (Cronbach's Alpha = .781, adequate internal consistency) global mean of 4.31

(SD = .754) for the *action stage* (Min = 1-precontemplation, Max = 5.00-maintenance); and, **Self-Efficacy Subscale** (Cronbach's Alpha = .871, very good internal consistency) global mean of 5.03 (SD = .781) for *80% confident or very good self-efficacy* (Min = 2.86, Max = 6.00)

Findings for Depression, Anxiety, and Quality of Life

Findings showed 43.1% (n=31) experienced **depression**, 44.4% (n=32) experienced **anxiety**, and 20.8% (n=15) sought **counseling** in the past year. The mean **quality of life rating** was 4.27 (Min = 2, Max = 6, SD = 4.27) for *closest to good quality of life*.

Findings on Associations with Patient-Provider Communication

Using independent t-tests, findings showed that those participants with **"No" history of depression in the past year** (n=36) had **a higher mean rating for quality of patient-provider communication** of 5.19 (SD-809) when compared to the lower mean of 4.37 (SD=1.33) for those who did ("Yes) (n=31) have this history (t=2.96, df=47.91, p=.005; Bonferroni Adjustment Significance, .05/9=.006, p<.006).

Using Pearson correlations, with the Bonferroni Adjustment Significance level (.05/12=.004, p<.004), findings showed that **the better the quality patient-provider communications then** the: **older the age** (r= .0363, p= .002); **higher number of years of diabetes diagnosis** (r= .122, p= -.027); **higher rating of overall health status** (r= .473, p= .000); **higher rating of overall quality of health care** (r= .856, p= .000); **higher health literacy skill** (r= .515, p= .000); **higher health literacy self-efficacy** (r= .437, p= .000); and, **higher knowledge of diabetes self-management** (r= .385, p= .000).

Findings on Associations with Quality of Life

Using independent t-tests, with the Bonferroni Adjustment Significance level (.05/9=.006, p<.006), findings showed differences, such that **those with a higher quality of life** had: a **history of receiving diabetes education** (n=58, mean=4.4; SD=.877), compared to those without that history (n=9, mean=3.44, SD=.877; t= -3.027, df=65, p=.004); **no history of past year depression** (n=36, mean=4.64, SD=.833), compared to those with such a history (n=31, mean=3.84, SD=.860; t=3.85, df=65, p=.000); **had not received counseling for depression in the past year** (n=52, mean=4.42, SD=.893) compared to those who had received it (n=15, mean=3.73, SD=.884; t=2.64, df=65, p=.010); and, **no history of past year anxiety** (n=35, mean=4.69, SD=.796), compared to those with such a history (n=32, mean=3.81, SD=.859; t=4.319, df=65, p=.000).

Using Pearson correlations, with the Bonferroni Adjustment Significance level (.05/12=.004, p<.004), findings showed that **the higher the quality of life** then: **older the age** (r= .0367, p= .002); **better overall health status** (r= .594, p= .000); **better overall quality of health care** (r= .450, p= .000); **lower the BMI** (r= -.37, p= .002); **higher health literacy skill** (r= .592, p= .000); **higher health literacy self-efficacy** (r= .528, p= .000); and, **higher knowledge of diabetes self-management** (r= .598, p= .000).

Findings for Predictors of Patient-Provider Communication and Quality of Life

First, using backward stepwise regression, while controlling for social desirability, **better quality patient-provider communication was significantly predicted by**: having **received diabetes education** (B = .491, p = .03); having **a higher**

rating of health care quality (B = .762, p = .000); having **higher level of health literacy skills** (B = .263, p = .023); and, being in a **lower stage of change for self-care behaviors** (B = -.309, p = .004, a finding in opposite direction of the correlation, so likely due to model controlling for other variables in the model)—with 79.2% of the variance explained by this model (R^2= .808, AdjR^2= .792).

Second, using backward stepwise regression, while controlling for social desirability, **better quality of life** was significantly predicted by: **female gender** (B = -.347, p = .036); **having received diabetes education** (B = .478, p = .022); **not having a past year anxiety** (B = -.574, p = .000); **higher annual household income** (B = .142, p = .000); **a lower rating of weight status** (B = -.478, p = .000); **higher health literacy self-efficacy** (B = .454, p = .001); and, **higher rating of knowledge of diabetes self-management** (B = .24, p = .015)—69.4% of the variance explained by this model (R^2= .731, AdjR^2= .694).

Discussion of Results

Discussion of Findings on Demographics, History, Health Status, and Provider Rating

The findings were comparable to the research of Gesinde (2019) who conducted a study with a diverse sample of women of color with diabetes, using the same research tools as in this study with a diverse sample. Similar to Gesinde, the hard-to-reach population of those with type 2 diabetes resulted in a small sample of N=64 in that study; and in a small sample of N=72 in the present sample. While Gesinde had an all-female sample (100%) with a mean age of 49.28 years (Min=22, Max=79, SD=13.242), the

present study was 78% (n=56) female and 22% (n=16) male with a mean age of 55.3 years (Min = 27, Max = 79, SD = 12).

In the present study, the sample had a mean annual household income of 4.11 (SD=1.2) for closest to $40,000 to $49,000 (Min = 1- < $9,000, Max = 11- $800,000 or more) with a mean level of education closest to Associate or tech degree. Gesinde (2019) also had a sample with a mean annual income closest to $40,000 to $49,000 with a mean education closest to an Associate degree.

In this study, the mean number of years for having a type 2 diabetes diagnosis was 11.19 years (SD=7.539; Min=1, Max= 41 years), while in Gesinde (2019), the mean number of years of since being diagnosed with type 2 diabetes was a much lower mean of just 5.13 years (Min = 1, Max = 19, SD = 4.065). In this study, the majority (77.8%, n=56) took pills orally, while Gesinde also found a majority (73.4%, n=47) took a pill form medication.

The participants in this study reported an overall health status mean of 3.71 (Min = 2, Max = 6, SD = .830) for closest to good—while Gesinde's (2019) participants also reported a mean (3.55) closest to good (Min = 1- Very poor, Max = 6 – Excellent, SD= 1.140). In the present study over half (59.7%, n=43) self-rated for overweight with a mean Body Mass Index (BMI) of 32.73 for obese (Min = 19.20, Max = 51.58, SD = 6.78). While, in contrast, the Gesinde (2019) study reported that 50% considered themselves to be of normal weight with a mean body mass index of 20.2 for closest to a normal BMI (Min = 6.51-Underweight, Max =51. 9 – Obese, SD= 12.1).

Whereas in the present study 59.7% (n=29) had private insurance, only 28.1% (n=18) had private insurance in the Gesinde (2019) study. The participants in this study

rated the overall quality of care they received from their provider with a mean of 4.63 (Min = 1, Max = 6, SD = 1.22) for between good and very good, while Gesinde found a mean rating of quality of care received from their provider of 3.92 for closest to good (Min = 1-Very poor, Max = 6-Excellent, SD=1.225).

Discussion of Findings for Patient-Provider Communication and Health Literacy

White et al. (2016) had a diverse sample of middle-aged White (63%), Hispanic (24%), and Black (18%), uninsured (96%), low income patients with uncontrolled diabetes. They reported the sample as reporting a poor-quality provider communication. In contrast, while using the new Patient-Provider Communication Scale (PP-CS-07), the mean score was 4.80 (min = 1.86, max = 6.00, SD = 1.14) for patient-provider communication was between good and very good, while closest to very good.

The findings for health literacy are comparable to those of Hall (2017) who first used the Scale Measuring Health Literacy via Skills and Self-Efficacy (SM-HL-V-S-SE-16) with a sample of Black men in a study on prostate cancer risks. In the present study, the **health literacy skills subscale** (Cronbach's Alpha = .915, high internal consistency) showed a mean score of 5.11 (Min = 3.63, Max = 6.00, SD = .703) for *closest to very good health literacy skills*. Hall (2017) also reported *closest to very good health literacy* skills, while reporting individual mean scores for each of the 8 questions measuring health literacy skills (# 1 M=4.8, SD=1.03; # 2 M=4.85, SD=1.11; # 3 M=4.83, SD=3.23; # 4 M=4.80, SD=3.10; # 5 M=5.05, SD=.81; # 6 M=4.76, SD=.86; # 7 M=5.00, SD=.74; and # 8 M=4.95, SD=.84).

Secondly, the present study found for the **health literacy self-efficacy subscale** (Cronbach's Alpha = .926, high internal consistency) a mean of 5.33 (Min = 3.75,

Max = 6.00, SD = .650) for *closest to 80% confident or very good health literacy self-efficacy*. This was also very similar to the findings of Hall (2017) with a sample of Black men where means of individual items for each of the 8 questions measuring health literacy self-efficacy were *closest to 80% confident or very good health literacy self-efficacy* (# 1 M=79%, SD=23.2; # 2 M=79%, SD=21.2; # 3 M=79%, SD=22.5; # 4 M= 79%, SD=18.1; # 5 M=83% SD=15.8; # 6 M= 79%, SD=17.3; # 7 M=80%, SD=14.8; and, # 8 M=80%, SD=17.0.) type 2 diabetes self-management knowledge score was 3.92, or closest to good (Min=2- Poor, Max=6-Excellent, SD=1.159).

Discussion of Findings on Multiple Dimensions of Diabetes Self-Management

Comparisons on multiple dimensions of diabetes self-management could be readily compared to those of Gesinde (2019), given the use of the same measures. First, the work of Gesinde is most comparable to findings in regards to level of **knowledge** for how to care for their type 2 diabetes with a mean of 4.89 (SD = .894: min=3; max=6) for *closest to very good knowledge*. Similarly, the present study found the level of **knowledge** for how to care for type 2 diabetes to be a mean of 4.89 (SD = .894: min=3; max=6) for *closest to very good knowledge*.

In the present study, findings on the *Stage of Change and Self-Efficacy for 7 Diabetes Self-Management Behaviors (SOC-SEC-F-7-DSMB-14)* scale showed: **Stages of Change Subscale** (Cronbach's Alpha = .781, adequate internal consistency) global mean of 4.31 (SD = .754) for the *action stage* (Min = 1-precontemplation, Max = 5.00-maintenance)—whereas Gesinde (2019) found a Global Stage of Change sub-scale mean of 3.75 for *closest to action stage* (Min= 1- precontemplation, Max=5-maintenance, SD=1.16; Cronbach's Alpha = .903). This study found for the **Self-Efficacy Subscale**

(Cronbach's Alpha = .871, very good internal consistency) a global mean of 5.03 (SD = .781) for *80% confident* (Min = 2.86, Max = 6.00). Of note, there was a contrast here from Gesinde (2019) who found a Global Self-Efficacy sub-scale mean of 4.6 for *between 60% confident to 80% confident* (Min=1.14, Max=6, SD=1.35; Cronbach's Alpha = .928).

Discussion of Findings for Depression, Anxiety, and Quality of Life

Here, again, findings are comparable to Gesinde (2019). In the present study, findings showed 43.1% (n=31) experienced depression, 44.4% (n=32) experienced anxiety, and 20.8% (n=15) sought counseling in the past year. Gesinde used a slightly different version of the scale measuring depression, finding that 51.6% (n=33) of the women reported experiencing depression within the past thirty days, while 78.8% (n=26) of them sought out counseling

In the present study, the mean quality of life rating was 4.27 (Min = 2, Max = 6, SD = 4.27) for *closest to good quality of life*, while using the same scale as did Mecklembourg (2019). Similarly, while using a sample of African American breast cancer survivors, Mecklembourg found the mean for quality of life to be 4.36 for *closest to a good quality of life* (min=2, max=6, SD=1.049).

Discussion of Findings on Associations and Predictors of Patient-Provider Communication and Quality of Life—and Implications and Recommendations

Focus on Co-Morbid Depression and Anxiety

It was not surprising that those with a higher quality of life had no history of past year depression. Also, a Pearson correlation showed that a higher quality of life was associated with no history of past year depression. Further, independent t-tests showed

that those with no depression had a higher mean rating for quality of patient-provider communication, compared to those with such a history. Juarez et al., (2018) found that depression was associated with adverse health outcomes, while emphasizing the need to screen for factors such as depression. Mendenhall et al., (2017) found that depression was often co-morbid with diabetes. Of note, when controlling for social desirability, a better quality of life was significantly predicted by not having past year anxiety.

Implications and Recommendations

Implications and Recommendations #1: Depression and Anxiety Screening in Clinical Practice and Assessment in Future Research

Thus far, implications of the findings suggest the important role of health educators and healthcare providers in screening type 2 diabetics for mental health issues such as depression and anxiety. This study used a very short tool for assessing past year depression and anxiety, as well as past year receipt of any counseling that can be used as part of a brief screening process. Future research should use this study's brief tool to expand the literature to include a focus on not only depression, but also anxiety—as potential co-morbid factors important to health outcomes and quality of life for those with type 2 diabetes.

Focus on Education and Provider Communication

Powers et al. (2021) stressed how Diabetes Self-Management Education and Support (DSMES) improves health outcomes and quality of life. Baldoni et al. (2017) emphasized the importance of educational strategies to improve diabetic patients' self-care. In this regard, the importance of patients having received diabetes education was highlighted in the findings. Independent t-tests showed that those with a higher quality of

life had a history of receiving diabetes education. Pearson correlations showed that the higher the quality of life then the higher the knowledge of diabetes self-management. The regression showed that better quality patient-provider communication was significantly predicted by having received diabetes education. And, better quality of life was significantly predicted by having received diabetes education, and by a higher rating of knowledge of diabetes self-management—just to highlight these selected predictors.

Powers et al. (2021) also indicated the importance of provider communication in delivering diabetes education, in order to "give people with diabetes the knowledge, skills, and confidence to accept responsibility for their self-management;" and, this includes "collaborating with their health care team, making informed decisions, solving problems, developing personal goals and action plans, and coping with emotions and life stresses" (p. 353). In support of this emphasis in the literature, other findings showed with Pearson correlations that the better the quality of patient-provider communications then the higher both health literacy skill and higher health literacy self-efficacy. Further, the regression showed that better quality patient-provider communication was significantly predicted by a higher rating of health care quality, and a higher level of health literacy skills—as just selected variables for highlighting here. Hence, the body of findings are consistent with Beverly et al. (2016) emphasizing the importance of physicians improving their communication in a way that positively impacts patients' self-management of diabetes.

Implications and Recommendations #2: Provider Training in Communication and Research to Assess the Impact of Training

The findings highlight the important role of providers receive training in not only the medical management of type 2 diabetes, but also in what constitutes effective

communication. Training in communications skills emerges as essential. Beverly et al. (2016) identified strategies for physicians to improve their communication in a way that positively impacts self-management of diabetes, such as, for example, the use of open-ended questions and motivational interviewing. Of note, learning how to ask open-ended questions is a key part of training in motivational interviewing, as per Miller and Rollnick (2013). However, actual training is needed in communication techniques, such as motivational interviewing. Miller and Rollnick indicated that training is needed in motivational interviewing even when it is to be used in brief encounters, such as those between patients and providers. It becomes important for providers to receive formal training in the use of brief motivational interviewing. Indeed, all personnel working with the population need such training, including health educators, nurses, and diabetes educators.

The Patient-Provider Communication Scale (PP-CS-7) is a new tool created for this study that can be used in future research. Future research could use the PP-CS-7 to compare ratings by patients of their providers who received training in motivational interviewing to those not trained in this communication method. Powers et al. (2021) also acknowledged how barriers to diabetes treatment and management can include the provider, as well as health policy. Policy for medical centers, hospitals and clinics should require providers to be trained in brief motivational interviewing, as a way to improve patient outcomes and reduce the high costs associated with the treatment of patients presenting type 2 diabetes. Research can also investigate to what extent mandatory training for providers in brief motivational interviewing improves patient outcomes and reduces costs.

Limitations

There were several limitations to this study, beginning with the online survey format. While selected for efficiency and ultimately successful, it required computer and internet access to participate, which can be a barrier for individuals who do not readily have internet access and/or are not comfortable using such technology due to personal preference or computer literacy. This online format was also limiting in recruitment, as it was done primarily via social media., favoring individuals with computer/internet access and/or users with a general comfort and/or preference for using online platforms. Specifically, with this in mind, the principal investigator included on-the-ground recruitment activity, supplying a tablet with the survey's landing page preloaded. Also, as a convenience sample, there is greater opportunity for volunteer bias.

Study results may not be reflective of the general population, as the sample size was not large, and data collected from the study sample was all self-reported. Additionally, the exclusion criteria were minimal. While it reduced restrictions to participate, the data collected may be best used to guide further, more focused research in health education, including: quality of life for people with type 2 diabetes; patient-provider communication; provider training in motivational interviewing and related hospital policy.

Conclusion

It must be emphasized how both globally and in the United States, type 2 diabetes remains a highly prevalent condition (Cowie, 2021). Particularly disturbing are projections that the "prevalence of diagnosed diabetes is projected to increase in the U.S.

from 22.3 million (9.1% of the total population) in 2014, to 39.7 million (13%) in 2030, and to 60.6 million (17%) in 2060" (Powers et al., 2021 p. 351). Also disturbing is how this is an "expensive disease" with associated medical costs for caring with a person with diabetes being "2.3 times more than for a person without diabetes" (p. 351).

With good justification, this study sought to identify significant predictors of each of the **two study outcome variables of a # 1 a higher quality of patient-provider communication, and # 2 a higher quality of life**. Hence, the study recruited an online sample (N=72) that was 78% (n=56) female with a *mean age of 55.3 years* (Min = 27, Max = 79, SD = 12)—while 71% Black/African American, 19% White, with 69% born in the United States. The mean number of years for having a type 2 diabetes diagnosis was 11.19 years (SD=7.539; Min=1, Max= 41 years). The majority (77.8%, n=56) took pills orally. Their overall health status mean was closest to *good*. They rated the overall quality of care they received from their provider between *good* and *very good.*

Using the new *Patient-Provider Communication Scale (PP-CS-07*, patient-provider communication was *between good and very good, while closest to very good*.

Using the *Scale Measuring Health Literacy via Skills and Self-Efficacy (SM-HL-V-S-SE-16),* **health literacy skills** were *closest to very good,* and **health literacy self-efficacy** was *closest to very good* health literacy self-efficacy.

Their level of **knowledge** for how to care for their type 2 diabetes was *closest to very good knowledge*. Findings on the *Stage of Change and Self-Efficacy for 7 Diabetes Self-Management Behaviors (SOC-SEC-F-7-DSMB-14)* scale showed: **Stages of Change** in the *action stage*); and, **Self-Efficacy** at *80% confident for very good.*

Findings showed 43.1% experienced depression, 44.4% experienced anxiety, and 20.8% sought counseling in the past year. The mean quality of life rating was *closest to good quality of life*.

First, using backward stepwise regression, while controlling for social desirability, **better quality patient-provider communication was significantly predicted by**: having received diabetes education, having a higher rating of health care quality, having higher level of health literacy skills, and, being in a lower stage of change for self-care behaviors—with 79.2% of the variance explained by this model.

Second, using backward stepwise regression, while controlling for social desirability, **better quality of life** was significantly predicted by: female gender, having received diabetes education, not having a past year anxiety, higher annual household income, a lower rating of weight status, higher health literacy self-efficacy, higher rating of knowledge of diabetes self-management—69.4% of the variance explained by this model.

The findings make a compelling case for: 1) all health educators and providers screening patients with type 2 diabetes for depression and anxiety, using the brief tool used in this study—which can also be used in future research; and, 2) future research evaluating the impact of health educators and providers being trained in motivational interviewing, while using the Patient-Provider Communication Scale (PP-CS-7), as a new tool created for this study, comparing ratings by patients of their providers who received training in motivational interviewing versus those not trained. And, hospital policy might wisely mandate training in brief motivational interviewing, while research should evaluate the impact of such training in containing costs.

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Appendix A

Letter of IRB Approval

TEACHERS COLLEGE
COLUMBIA UNIVERSITY

Teachers College IRB *Exempt Study Approval*

To: JoNise Caleb
From: Myra Luna Lucero, Research Compliance Manager
Subject: IRB Approval: 19-151 Protocol
Date: 01/22/2019

Thank you for submitting your study entitled, "*Health Communication, Health Literacy, and the Prevalence of Obesity, Depression, Anxiety and Good Disease Self-Management Among Diverse Adults Living with Type 2 Diabetes: Identifying Predictors of High Quality Patient-Provider Communication and Quality of Life*;" the IRB has determined that your study is **Exempt** from committee review (Category **2**) on 01/22/2019.

Please keep in mind that the IRB Committee must be contacted if there are any changes to your research protocol. The number assigned to your protocol is **19-151**. Feel free to contact the IRB Office by using the "Messages" option in the electronic Mentor IRB system if you have any questions about this protocol.

Please note that your Consent form bears an official IRB authorization stamp and is attached to this email. Copies of this form with the IRB stamp must be used for your research work. Further, all research recruitment materials must include the study's IRB-approved protocol number. You can retrieve a PDF copy of this approval letter from the Mentor site.

Best wishes for your research work.

Sincerely,
Dr. Myra Luna Lucero
Research Compliance Manager
IRB@tc.edu

Attachments:
- 2-JoNise Caleb-CONSENT FORM_IRB.pdf

Appendix B

The Study Email

DO YOU HAVE TYPE 2 DIABETES?
******TAKE A CONFIDENTIAL SURVEY********

IRB Protocol Number 19-151

The Research Group on Disparities in Health within the Department of Health and Behavior Studies at Teachers College, Columbia University, in New York, NY is conducting a study to learn about factors associated with a higher quality of communication between patients and their medical providers, as well as a higher quality of life for those living with type 2 diabetes. Knowledge of these factors may guide health educators in designing interventions to improve the lives of diverse adults living with type 2 diabetes.

- Participation in this study is limited to the first 250 adult (age 18+) volunteers
- Completing the online survey takes about 20 minutes
- Those who complete the survey will have a 3 in 250 chance of winning 1 of 3 $100 Amazon gift cards
- Please click on the link below to view the informed consent, learn about your rights as a participant and proceed to the survey.
- We also invite you to forward this email to other type 2 diabetics—or text message, or tweet the message, below:

***GO TO* https://tinyurl.com/SurveyFor-Type-2-Diabetics to take the survey for Type 2 Diabetics for chance to win 1 of 3 $100 Amazon gift cards** NOTE: Participants have a 3 in 250 chance of winning 1 of 3 $100 Amazon gift cards

.

THANK YOU FOR YOUR PARTICIPATION!

If you have any questions or would like to have additional information about the study, please contact:

JoNise Caleb, MPH, Doctoral Candidate, Department of Health and Behavior Studies, Teachers College, Columbia University, Box 114, 525 W. 120th Street, New York, NY 10027; jmc2322@tc.columbia.edu -
OR –
Barbara C. Wallace, Ph.D., Director, Research Group on Disparities in Health, Professor of Health Education, Clinical Psychologist, Department of Health and Behavior Studies, Teachers College, Columbia University, Box 114, 525 W. 120th Street, New York, NY 10027; bcw3@tc.columbia.edu; Study Contact Number: 267-269-7411

Appendix C

The Study Text/Tweet

GO TO **https://tinyurl.com/SurveyFor-Type-2-Diabetics to take the survey for Type 2 Diabetics for chance to win 1 of 3 $100 Amazon gift cards** NOTE: Participants have a 3 in 250 chance of winning 1 of 3 $100 Amazon gift cards

Appendix D

Study Flyer

DO YOU HAVE TYPE 2 DIABETES?

******TAKE A CONFIDENTIAL SURVEY********

IRB Protocol Number 19-151

The Research Group on Disparities in Health within the Department of Health and Behavior Studies at Teachers College, Columbia University, in New York, NY is conducting a study to learn about factors associated with a higher quality of communication between patients and their medical providers, as well as a higher quality of life for those living with type 2 diabetes. Knowledge of these factors may guide health educators in designing interventions to improve the lives of diverse adults living with type 2 diabetes.

- Participation in this study is limited to the first 250 adult (age 18+) volunteers
- Completing the online survey takes about 20 minutes
- Those who complete the survey will have a 3 in 250 chance of winning 1 of 3 $100 Amazon gift cards
- Please click on the link below, or tear-off a tab below and use the link, so you can view the informed consent, learn about your rights as a participant and proceed to the survey.
- We also invite you to forward this email to other type 2 diabetics—or text message, or tweet the message, below:

GO TO https://tinyurl.com/SurveyFor-Type-2-Diabetics to take the survey for Type 2 Diabetics for chance to win 1 of 3 $100 Amazon gift cards

THANK YOU FOR YOUR PARTICIPATION! HAVE QUESTIONS?

If you have any questions or would like to have additional information about the study, please contact:
JoNise Caleb, MPH, Doctoral Candidate, Department of Health and Behavior Studies, Teachers College, Columbia University, Box 114, 525 W. 120th Street, New York, NY 10027; jmc2322@tc.columbia.edu - ***OR –***
Barbara C. Wallace, Ph.D., Director, Research Group on Disparities in Health, Professor of Health Education, Clinical Psychologist, Department of Health and Behavior Studies, Teachers College, Columbia University, Box 114, 525 W. 120th Street, New York, NY 10027; bcw3@tc.columbia.edu; Study Contact Number: 267-269-7411

Tear-off a tab with the link to the survey and spread the word

GO TO https://tinyurl.com/SurveyFor-Type-2-Diabetics to take the survey for Type 2 Diabetics for chance to win 1 of 3 $100 Amazon gift cards	GO TO https://tinyurl.com/SurveyFor-Type-2-Diabetics to take the survey for Type 2 Diabetics for chance to win 1 of 3 $100 Amazon gift cards	GO TO https://tinyurl.com/SurveyFor-Type-2-Diabetics to take the survey for Type 2 Diabetics for chance to win 1 of 3 $100 Amazon gift cards

Appendix E

Informed Consent and Participant's Rights

Teachers College, Columbia University
525 West 120th Street
New York NY 10027
212 678 3000

INFORMED CONSENT

IRB Protocol Number 19-151

Protocol Title: Health Communication, Health Literacy, and the Prevalence of Obesity, Depression, Anxiety and Good Disease Self-Management Among Diverse Adults Living with Type 2 Diabetes: Identifying Predictors of High Quality Patient-Provider Communication and Quality of Life

Principal Investigator: JoNise Caleb, MPH, Teachers College, Columbia University, 718 864-8512; jmc2322@tc.columbia.edu

INTRODUCTION You are being invited to participate in this research study called "Health Communication, Health Literacy, and the Prevalence of Obesity, Depression, Anxiety and Good Disease Self-Management Among Diverse Adults Living with Type 2 Diabetes: Identifying Predictors of High-Quality Patient-Provider Communication and Quality of Life." You may qualify to take part in this research study if you: are an adult age 18 or above who has been diagnosed with Type 2 diabetes and are able to read and understand English on a high school level. Approximately 250 people will participate in this study, and it will take approximately 20 minutes of your time to complete.

WHY IS THIS STUDY BEING DONE? This study is being done to learn what factors are associated with a higher quality of communication between patients and their medical providers, as well as a higher quality of life for those living with type 2 diabetes. Having knowledge of these factors may guide health educators in designing interventions to improve the lives of diverse adults living with type 2 diabetes.

WHAT WILL I BE ASKED TO DO IF I AGREE TO TAKE PART IN THIS STUDY? If you decide to participate in the study, you will answer a series of questions for an online survey on the following topics: your personal background (age, education, etc.); your history of being diagnosed with type 2 diabetes and receiving education on diabetes self-management; ratings of your health status and medical care; ratings of the quality of communication you share with your medical providers; your confidence when speaking to your providers; ratings of your diabetes self-management skills; ratings of any feelings of depression or anxiety; and, rating the quality of your life.

WHAT POSSIBLE RISKS OR DISCOMFORTS CAN I EXPECT FROM TAKING PART IN THIS STUDY? This is a minimal risk study, which means the harms or discomforts that you may experience are not greater than those you would ordinarily encounter if you were completing paperwork in a clinic, hospital, school, or work setting. The risks of study participation include the possibility that you may feel some discomfort

from taking the survey or some stress due to some of the questions. However, your participation in this study is completely voluntary, and you can stop at any time.

WHAT POSSIBLE BENEFITS CAN I EXPECT FROM TAKING PART IN THIS STUDY? There is no direct benefit to you for participating in this study.

WILL I BE PAID FOR BEING IN THIS STUDY? You will not be paid to participate. However, when you complete the survey you will be invited to enter your email address and to hit a "submit" button—so that you are officially entered into a drawing for a chance to receive a prize (i.e., there will be 3 bar coded Amazon gift certificates for $100 each). You do not have to enter the lottery drawing to complete the survey. Once you submit your email address, then it will automatically be entered into a private and secure data base that even the principal investigator cannot access. Once 250 people have completed the entire survey, you will have a 3 in 250 chance of winning one of the 3 bar coded Amazon gift certificates for $100 each. The www.Amazon.com gift certificates will be sent to three randomly chosen e-mail accounts using a secure online program. This occurs without in any way linking your identity to the survey results. The principal investigator is not able to view any of the e-mail addresses to which the gift certificates are sent. Only the 3 winners will be contacted.

WHEN IS THE STUDY OVER? CAN I LEAVE THE STUDY BEFORE IT ENDS? The study is over when you have completed the online survey. However, you can discontinue answering the survey questions at any time. You can exit the study at any time and delete the link to the study.

PROTECTION OF YOUR CONFIDENTIALITY The study does not involve linking your survey responses to any personal information that might identify you, keeping your information confidential. Teachers College, Columbia University has determined that www.Qualtrics.com provides a secure platform for the online survey you will take. The survey data files will also be saved on the primary researcher's password protected computer. Regulations require that research data be kept for at least three years.

For quality assurance, the study team, and/or members of the Teachers College Institutional Review Board (IRB) may review the data collected from you as part of this study. Otherwise, all information obtained from your participation in this study will be held strictly confidential and will be disclosed only with your permission or as required by U.S. or State law.

HOW WILL THE RESULTS BE USED? The results of this study will be published in journals and presented at academic conferences. This study is being conducted as part of the doctoral dissertation of the principal investigator.

WHO CAN ANSWER MY QUESTIONS ABOUT THIS STUDY?
If you have any questions about taking part in this research study, you should contact the principal investigator, JoNise Caleb, MPH at jmc2322@tc.columbia.edu or at 718 864-

8512; You can also contact the sponsor/ supervisor of this research study, Dr. Barbara Wallace, at bcw3@tc.columbia.edu or 267-269-7411.

If you have questions or concerns about your rights as a research subject, you should contact the Institutional Review Board (IRB) (the human research ethics committee) at 212-678-4105 or email IRB@tc.edu. Or you can write to the IRB at Teachers College, Columbia University, 525 W. 120th Street, New York, NY 10027. Box 151. The IRB is the committee that oversees human research protection for Teachers College, Columbia University.

PARTICIPANT'S RIGHTS

- I have read the Informed Consent Form and have been offered the opportunity to discuss the form with the researcher.
- I have had ample opportunity to ask questions about the purposes, procedures, risks and benefits regarding this research study.
- I understand that my participation is voluntary. I may refuse to participate or withdraw participation at any time without penalty.
- The researcher may withdraw me from the research at his or her professional discretion. I understand that if I take the survey more than once I will be eliminated from the study.
- If, during the course of the study, significant new information that has been developed becomes available which may relate to my willingness to continue my participation, the researcher will provide this information to me.
- Any information derived from the research study that personally identifies me will not be voluntarily released or disclosed without my separate consent, except as specifically required by law.
- I should receive a copy of the Informed Consent Form document. (I understand that I can download it).

By checking the box below, I agree to participate in the study and I am confirming that I am an adult age 18 or above, have been diagnosed with type 2 diabetes, and am able to read and understand English on a high school level.

☐ **I agree to participate in this study.**

Appendix F

Screening Survey

THE SCREENING TOOL FOR

THE STUDY FOR DIVERSE ADULTS DIAGNOSED WITH TYPE 2 DIABETES

Teachers College, Columbia University
Institutional Review Board (IRB) Protocol # 19-151

This study seeks adults living with type 2 diabetes to take a survey and rate a video on type 2 diabetes self-care.

1-Are you an adult age 18 or above?
Yes___ No____
2-Are you able to read and understand English on the 12th grade level?
Yes___ No____
3-Have you been told you have type 2 diabetes?
Yes___ No____
4-Are you able to devote about **20 minutes** to this study at this time—for a chance to win one of three $100 Amazon gift cards?
Yes___ No____

If they answered YES to all of the above questions→ they access survey.
If they answered NO to any of the above questions→ they receive this message:
Thank you for your time, but, unfortunately you are not qualified to participate in this study.
Feel free to invite others to:

> "**GO TO https://tinyurl.com/SurveyFor-Type-2-Diabetics to take the Survey for Type 2 Diabetics for a chance to win 1 of 3 $100 Amazon gift cards.**"

Appendix G

Study Survey

THE SURVEY FOR

THE STUDY FOR DIVERSE ADULTS DIAGNOSED WITH TYPE 2 DIABETES

Teachers College, Columbia University
Institutional Review Board (IRB) Protocol # 19-151

PART I: BASIC DEMOGRAPHICS (BD-10)

[A standard tool created for use by the Research Group on Disparities in Health]

Instructions: Please answer the following questions by either selecting your desired answer or by providing an answer in the text box.

Please enter your zip code_____

1-What gender do you identify with?

a. Male
b. Female
c. Other (Please indicate_____)

2-What is your age? [DROP DOWN MENU from 15 to 100—Exit any 17 & below)

3-What is your race/ethnicity:

a. White / Caucasian / European American
b. Black / African American
c. Arab American / Middle Eastern
d. Asian (Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, or other Asian)
e. Cuban, other Spanish
f. Hispanic / Latino (including Puerto Rican, Mexican, Mexican American, Chicano,
g. Native American/American Indian / Alaska Native
h. Native Hawaiian / Pacific Islander
i. Other group(s) (specify)

4-My skin color is

a. ___Very Dark b. ___Dark c. ____Medium to Dark
d. ___Medium to Light e. ___Light f. ____Very Light g.___ White

5-Where you born in the United States?

a. Yes
b. No [If no Skip next question]

(If "No" to Q4)

What is your country of Origin?

[DROP DOWN MENU for countries]

6-How many years have you been living in the United States?

[DROP DOWN MENU from 1-100 years—Exit any 2 years or less]

7-What is the highest degree or level of school that you have completed?

No schooling
Nursery school to 8th grade
Some high school, no diploma
High school graduate, diploma or the equivalent (for example: GED)
Some college credit, no degree
Associate degree or technical degree (for example: AA, AS)
Bachelor's degree (for example: BA, BS)
Master's degree (for example: MA, MS, MEd)
Professional degree (MD, DDS, DMD, PharmD)
Doctorate degree (PhD, EdD, DrPH

8-What is your marital status?

Single, never married
Married
Widowed
Divorced
Separated

9-Are your currently:

Employed for wages
Self-employed
Unemployed
A homemaker
A student
Military
Retired
Disabled/Unable to work

10-My annual household income is:

1-Less than $9,000
$10,000 to $19,000
$20,000 to $39,000
$40,000 to $49,000
$50,000 to $99,999
$100,000 to $199,999
$200,000 to $299,000
$300,000 to $399,000
$400,000 to $499,000
$500,000 to $799,000
11-$800,000 or More

PART II: DIABETES HEALTH BACKGROUND (DHB-5)

[A new tool created for this study by the Principal Investigator, with some questions adapted from Zaldivar's (2015) Brief Health Background of the Patient with Diabetes, specifically questions # 3-5]

1-I was diagnosed with Type 2 diabetes
Yes___ No___ (No→Exit survey)
If Yes →
2-The number of years ago that I was given a diagnosis of Type 2 diabetes [Drop down menu of 1-60 years]

3-I take the following type of diabetes medications (check all that apply)
__pill for taking orally by mouth to manage diabetes
__insulin needle for injection to manage diabetes
__an insulin pen for diabetes
__I do not take any medication
__I am not sure, I do not know

4-I have been advised to check my blood sugar at home by doing the following: (check all that apply)
__a finger prick with lancet/sharp needle, placement of blood on a strip, and placing the strip in a meter that shows their blood sugar level
__a meter to test blood sugar that can be used in places other than the finger
__use of a continuous glucose monitoring systems (i.e., interstitial glucose measuring device that is possibly combined with use of an insulin pump)
__I do not test my blood sugar at home
__I am not sure, I do not know

5-Have you ever received education on how to self-manage your diabetes?
No Yes

PART III: PERSONAL HEALTH BACKGROUND (PHB-7)

[This is a standard tool created for use by the Research Group on Disparities in Health]

1-I rate my overall health status as:
1_Very poor 2_Poor 3_Fair 4_Good 5_Very Good 6_Excellent __
2-What is your height in feet (Drop down, 4-9)
3-What is your height in inches (Drop down, 0-11)
4-My weight in pounds is (Drop down, 70-400)
5-I consider myself to be:
__Underweight __Normal weight __ Overweight __Obese
6-My type of medical insurance is:

a. Private insurance plan (e.g. Blue Cross/Blue Shield, Aetna, Oxford, etc.)
b. HMO
c. Medicaid
d. Medicare
e. Not applicable, I have no medical insurance
f. Other (please specify)

7-I rate the overall quality of care I receive from my primary healthcare provider as
1_Very poor 2_Poor 3_Fair 4_Good 5_Very Good 6_Excellent
__Not applicable (I do not have a primary healthcare provider, or do not receive any health care)

PART IV. PATIENT-PROVIDER COMMUNICATION SCALE (PP-CS-7)

[This is a new tool created by the Principal Investigator and the Dissertation Sponsor for use by the Research Group on Disparities in Health]

1-I rate my provider's ability to make me feel welcomed, as though they are glad to see me
1_Very poor 2_Poor 3_Fair 4_Good 5_Very Good 6_Excellent __NA, No Provider
2-I rate my provider's ability to make me feel genuinely listened to, and for being attentive to me
1_Very poor 2_Poor 3_Fair 4_Good 5_Very Good 6_Excellent __NA, No Provider
3-I rate my provider's ability to clearly communicate with me so I understand most of what they are saying to me
1_Very poor 2_Poor 3_Fair 4_Good 5_Very Good 6_Excellent __NA, No Provider
4-I rate my provider's ability to connect with me, so I feel I am sharing time with another human being
1_Very poor 2_Poor 3_Fair 4_Good 5_Very Good 6_Excellent __NA, No Provider
5-I rate my provider's ability to promote my feelings of trust, so there is no mistrust in our relationship
I***1_Very poor 2_Poor 3_Fair 4_Good 5_Very Good 6_Excellent __NA, No Provider***
6-I rate the quality of the communication I share with my provider as
1_Very poor 2_Poor 3_Fair 4_Good 5_Very Good 6_Excellent __NA, No Provider
7-I rate my provider's ability to really see me for me—and not as a stereotype or certain type of patient as a
1_Very poor 2_Poor 3_Fair 4_Good 5_Very Good 6_Excellent __NA, No Provider

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PART V: SCALE MEASURING HEALTH LITERACY VIA SKILLS AND SELF-EFFICACY (SM-HL-V-S-SE-16)

[This is a tool created for use by the Research Group on Disparities in Health, having been used in Hall, 2018, for example]

The CDC has defined health literacy, as follows: "The Patient Protection and Affordable Care Act of 2010, Title V, defines health literacy as the degree to which an individual has the capacity to obtain, communicate, process, and understand basic health information and services to make appropriate health decisions" (para. 1).

Please answer the following questions:

For seeking out health information,
1-I would rate my ability as

Very Poor	Poor	Fair	Good	Very Good	Excellent
1	2	3	4	5	6

2-And, I would rate my level of confidence for doing this as

Not confident					Extremely confident
0%	20%	40%	60%	80%	100%

For seeking out health services, such as going to a clinic, hospital, or making an appointment to see a medical doctor in their office
3-I would rate my ability as

Very Poor	Poor	Fair	Good	Very Good	Excellent
1	2	3	4	5	6

4-And, I would rate my level of confidence for doing this as

Not confident					Extremely confident
0%	20%	40%	60%	80%	100%

For communicating with a health professional and asking all the questions that I have about my health
5-I would rate my ability as

Very Poor	Poor	Fair	Good	Very Good	Excellent
1	2	3	4	5	6

6-And, I would rate my level of confidence for doing this as

Not confident					Extremely confident
0%	20%	40%	60%	80%	100%

For thinking about what I have been told by a health professional and turning it over in my mind so I begin to understand what is being told to me
7-I would rate my ability as

Very Poor	Poor	Fair	Good	Very Good	Excellent
1	2	3	4	5	6

8-And, I would rate my level of confidence for doing this as

Not confident					**Extremely confident**
0%	20%	40%	60%	80%	100%

For really understanding what I have been told by a health professional

9-I would rate my ability as

Very Poor	**Poor**	**Fair**	**Good**	**Very Good**	**Excellent**
1	2	3	4	5	6

10-And, I would rate my level of confidence for doing this as

Not confident					**Extremely confident**
0%	20%	40%	60%	80%	100%

For being able to memorize and repeat (state it aloud) what I have been told by a health professional

11-I would rate my ability as

Very Poor	**Poor**	**Fair**	**Good**	**Very Good**	**Excellent**
1	2	3	4	5	6

12-And, I would rate my level of confidence for doing this as

Not confident					**Extremely confident**
0%	20%	40%	60%	80%	100%

For being able to ask questions that will help me to better understand, or completely understand what a health professional has explained to me

13-I would rate my ability as

Very Poor	**Poor**	**Fair**	**Good**	**Very Good**	**Excellent**
1	2	3	4	5	6

14-And, I would rate my level of confidence for doing this as

Not confident					**Extremely confident**
0%	20%	40%	60%	80%	100%

For making the best health decisions for myself, deciding what actions I should take, and telling a health professional what I have decided to do, need to do, or prefer to do

15-I would rate my ability as

Very Poor	Poor	Fair	Good	Very Good	Excellent
1	2	3	4	5	6

16-And, I would rate my level of confidence for doing this as

Not confident					Extremely confident
0%	20%	40%	60%	80%	100%

PART VI: TYPE 2 DIABETES SELF-MANAGEMENT KNOWLEDGE (T2D-SMK -1)

[This is a standard type of scale created by Professor Barbara Wallace for use by the Research Group on Disparities in Health]

1-I rate my level of knowledge for how to care for my Type 2 Diabetes as follows:
1_Very poor 2_Poor 3_Fair 4_Good 5_Very Good 6_Excellent __

PART VII: STAGE OF CHANGE AND SELF-EFFICACY FOR 7 DIABETES SELF-MANAGEMENT BEHAVIORS (SOC-SEC-M-F-7-DSMB-14)

[This is a scale created by Professor Barbara Wallace for use by the Research Group on Disparities in Health, while based on the following: the American Association of Diabetes Educators' (AADE, 2014) AADE7™ Self-Care Behaviors: 1) healthy eating; 2) being active; 3) monitoring; 4) taking medications; 5) problem solving; 6) healthy coping, and 7) reducing risks. It was previously used Gesinde (2019) who used it as both a pre-video and post-video viewing tool in an e-health video study.]

1-When it comes to the behavior of ***healthy eating*** (counting your carbohydrates, reading food labels, measuring each serving of food), check the following that most applies to you:

1-a:

_____I am not thinking of doing this behavior at all.
_____I am thinking about doing this behavior.
_____I am preparing to do this behavior.
_____I have been doing this behavior for **less than six (6) months.**
_____I have been doing this behavior for **more than six (6) months**

1-b-My confidence level for performing this behavior:

____0% confident ____20% confident ____40% confident
____60% confident ____80% confident ____100% confident

2-When it comes to the behavior of ***being active*** (think about how many times a week do you do any exercise--whether walking, riding a bike, or dong any kind of physical activity, such that your heart beats a little faster, or your breathing increases) check the following that most applies to you:
2-a:
_____I am not thinking of doing this behavior at all.
_____I am thinking about doing this behavior.
_____I am preparing to do this behavior.
_____I have been doing this behavior for **less than six (6) months.**
_____I have been doing this behavior for **more than six (6) months**

2-b-My confidence level for performing this behavior:
____0% confident ____20% confident ____40% confident
____60% confident ____80% confident ____100% confident

3-When it comes to the behavior of ***monitoring*** (using a blood glucose meter to check your blood sugar, and recording and keeping track of your numbers, etc…) check the following that most applies to you:
3-a:
_____I am not thinking of doing this behavior at all.
_____I am thinking about doing this behavior.
_____I am preparing to do this behavior.
_____I have been doing this behavior for **less than six (6) months.**
_____I have been doing this behavior for **more than six (6) months**

3-b-My confidence level for performing this behavior:
____0% confident ____20% confident ____40% confident
____60% confident ____80% confident ____100% confident

4-When it comes to the behavior of ***taking medications*** (specifically, those prescribed for your diabetes by a medical professional, and adhering to all instructions for taking medication) check the following that most applies to you:
4-a:
_____I am not thinking of doing this behavior at all.
_____I am thinking about doing this behavior.
_____I am preparing to do this behavior.
_____I have been doing this behavior for **less than six (6) months.**
_____I have been doing this behavior for **more than six (6) months**

4-b-My confidence level for performing this behavior:
____0% confident ____20% confident ____40% confident
____60% confident ____80% confident ____100% confident

5-When it comes to the behavior of ***problem solving*** (thinking of ways to prevent high and low blood sugar levels**,** and what to do if blood sugar levels are too high or too low) check the following that most applies to you:
5-a:
_____I am not thinking of doing this behavior at all.
_____I am thinking about doing this behavior.
_____I am preparing to do this behavior.
_____I have been doing this behavior for **less than six (6) months.**
_____I have been doing this behavior for **more than six (6) months**

5-b-My confidence level for performing this behavior:
____0% confident ____20% confident ____40% confident
____60% confident ____80% confident ____100% confident

6-When it comes to the behavior of ***healthy coping*** (involving the ability to deal with life's stressors in a positive manner, including seeking support, etc…) check the following that most applies to you:
6-a:
_____I am not thinking of doing this behavior at all.
_____I am thinking about doing this behavior.
_____I am preparing to do this behavior.
_____I have been doing this behavior for **less than six (6) months.**
_____I have been doing this behavior for **more than six (6) months**

6-b-My confidence level for performing this behavior:
____0% confident ____20% confident ____40% confident
____60% confident ____80% confident ____100% confident

7-When it comes to the behavior of ***reducing risks*** (taking action to reduce the risk of vision loss, heart disease, or an amputation, etc..) check the following that most applies to you:
7-a:
_____I am not thinking of doing this behavior at all.
_____I am thinking about doing this behavior.
_____I am preparing to do this behavior.
_____I have been doing this behavior for **less than six (6) months.**
_____I have been doing this behavior for **more than six (6) months**

7-b-My confidence level for performing this behavior:
____0% confident ____20% confident ____40% confident

PART VIII: MORE ABOUT YOU (SOCIAL DESIRABILITY) (MAY-13)

[Using a short form, arising from the original work of: Crowne, D. and Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology,* 24(4):349-354. More details will be presented in dissertation]

Read each item below and decide whether the statement is true or false as it pertains to you personally. Circle T for True or F for false.

1. It is sometimes hard for me to go on with my work if I am not encouraged. T F
2. I sometimes feel resentful when I don't get my way. T F
3. On a few occasions, I have given up doing something because I thought too little of my ability. T F
4. There have been times when I felt like rebelling against people in authority even though I knew they were right. T F
5. No matter who I'm talking to, I'm always a good listener. T F
6. There have been occasions when I took advantage of someone. T F
7. I'm always willing to admit it when I make a mistake. T F
8. I sometimes try to get even rather than forgive and forget. T F
9. I am always courteous, even to people who are disagreeable T F
10. I have never been irked when people expressed ideas very different from my own. T F
11. There have been times when I was quite jealous of the good fortune of others. T F
12. I am sometimes irritated by people who ask favors of me. T F
13. I have never deliberately said something to hurt someone's feelings . T F

PART IX: RETROSPECTIVE DEPRESSION AND ANXIETY (R-DA-4)

[NOTE: This is a standard tool commonly used by Research Group on Disparities in Health RGDH). For this study, it was shortened (not asking about past month, past 6 months, only past year]

Depression is an overwhelming feeling of intense sadness. It can include feeling helpless, hopeless, and worthless. It can sometimes be expressed through angry outbursts, as well as bursting into tears. There can also be loss of appetite, or an increase in appetite. There can also be difficulty sleeping, or oversleeping. In addition, there can be a loss of interest in your activities. Such a depression can last for days or weeks. This goes beyond typical feelings of sadness, such as following some disappointment.

1-Now think back over the past year or 12 months. Do you think you experienced any **depression in the past year or 12 months**?

__No __Yes

2-If you answered Yes, above, did you seek out any kind of counseling (e.g. mental health professional)?

__No __Yes ___Not Applicable (i.e., no experience of depression)

Anxiety is an overwhelming and intense feeling of nervousness, fear, tension, powerlessness, and apprehension. It can reach a peak so there are moments of panic where one's heart may be pounding/beating quickly, or there is rapid breathing/difficulty breathing. A person may also experience sweating and trembling. Sometimes it can be so intense that one has trouble concentrating/thinking, leaving the house, or trouble being around other people. The fear can be very intense and one can feel like there is some impending danger. This goes beyond typical feelings of nervousness, such as when anticipating a new situation, or something unexpected, or unknown.

3-Now think back over the past year or 12 months. Do you think you experienced any **anxiety in the past year or 12 months**?

__No __Yes

4-If you answered Yes, above, did you seek out any kind of counseling (e.g. mental health professional)?

__No __Yes ___Not Applicable (i.e., no experience of anxiety)

_____

PART X: RATING YOUR QUALITY OF LIFE SCALE (RYQOL-S-1)

[This is a new scale created for use in this study, being based on the main areas covered in the quality of life scale created by Gordon and Siminoff (2010)—specifically physical function, social support, body image, emotional function, coping, cognitive function (excluding their future orientation, and breast cancer impact). It was also used by Mecklemberg (2019).]

Please rate yourself, after reading the following:

Please think about the **quality of your life,** including the following: my **ability to function physically** (my level of strength, tendency to experience fatigue, ability to walk up and down stairs, ability to perform physical activities around the house, ability to move my arms and legs, degree to which I feel pain in my body); my **amount of social support** (number of people I can rely on for help, including in a crisis); my **feelings about my body image** (attractiveness, finding clothing I like to wear); my **emotional functioning** (degree of depression, anxiety, worry, uncertainty); and my **mental functioning** (ability to concentrate, remember things, think clearly). Keeping all of this in mind, **please rate your quality of life at the present time**:

I rate my quality of life as:

__1-Very poor __2-Poor __3-Fair __4-Good __5-Very Good __6-Excellent

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END OF SURVEY: THANK YOU AND SHARE WITH OTHERS!

We invite you to text message, tweet, and e-mail other adults living with Type 2 Diabetes to:

> "**GO TO https://tinyurl.com/SurveyFor-Type-2-Diabetics to take the Survey for Type 2 Diabetics for a chance to win 1 of 3 $100 Amazon gift cards.**"

TO HAVE A CHANCE TO WIN A PRIZE! Click the link below:
<_____>

Thanks for completing the survey and clicking the FINAL link. You now have a 3 in 250 chance of winning a prize in our random drawing for a bar-coded gift certificate to www.Amazon.com (e.g. either a $300 prize, $300 prize, or $100 prize.

----------END OF SURVEY----------

DID YOU JUST PARTICIPATE IN ONE OF OUR RESEARCH STUDIES? * INTERESTED IN FREE OR LOW-COST ONLINE COUNSELING?

CLICK ON THIS LINK:
https://tinyurl.com/GET-FREE-LOW-COST-COUNSELING

OR READ BELOW
It is possible that your answering questions as a participant in this research study brought up uncomfortable feelings, thought and memories. Brief emergency counseling, crisis intervention counseling, and a referral to longer-term support may be helpful to you at this time. If that is the case, you may use any of the following resources for immediate help:

For Free Texting Crisis Help:
https://www.crisistextline.org/
You text 741741 when in crisis as a service available 24 hours a day, 7 days a week. You will reach a live trained Crisis Counselor who will respond quickly. The Crisis Counselor helps to move you from a hot moment to a cool calm and safe state, using effective active listening and suggested referrals—all using the Crisis Text Live's secure platform. If you have a phone plan with AT&T, T-Mobile, Sprint, or Verizon, texting to 741741 is free of charge.

Contact a Crisis Intervention Hotline for Immediate Help and Referrals: See a List of Hotline Phone Numbers:
https://www.allaboutcounseling.com/crisis_hotlines.htm

Examples of Crisis Intervention Hotlines:

- **If you are in immediate danger**, call 911
- **National Suicide Hotline**: 800-SUICIDE (800-784-2433)
- **National Suicide Prevention Lifeline**: 800-273-TALK (800-273-8255)
- **Grief Recovery Helpline**: 800-445-4808

Seek Out Top Rated, Low-Cost Online Counseling Services: https://www.e-counseling.com/tlp/therapy-1/?imt=1

Please see a list of the top rated online counseling services—with the average weekly cost as low as $35.

Seek Out Affordable Online Counseling: https://www.betterhelp.com/about/

Access affordable and convenient online counseling with professionals.

Seek Help from the Study Sponsor by E-Mail or Phone: bcw3@tc.columbia.edu or 267-269-7411.

You may contact the study sponsor, Dr. Barbara Wallace, receiving help with referrals.

* NOTE: The Research Group on Disparities in Health (RGDH) is part of the Center for Health Equity and Urban Science Education, Teachers College, Columbia University. Numerous studies are